

Box 06A

Box

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#211

# JOB TRACKING PRODUCTION ORDER

Company Name: \_\_\_\_\_

DATE: \_\_\_\_\_

Order #: \_\_\_\_\_

INITIALS:

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Hold Drawings & Update Files

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Print Order

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Return Superceded Originals

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Return Originals

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Packed & Shipped

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Date Sent: \_\_\_\_\_

Time Sent: \_\_\_\_\_ a.m. ☐ p.m. ☐

COMMENTS:

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19-AB-974.1-.3

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WTC DRAWING  
BOOK 19  
AB-1-K-1055



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT	THE WORLD TRADE CENTER	TITLE	DRAWING BOOK 19 - REVISIONS AFTER FABRICATION	DATE	5/18/73
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SIONS

DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE
19-AB-	0.1 INDEX & DATE PAGE	5/18/73	19-AB-952	HOIST SUPPTS	12/ 7/70	19-A -983.3	FL.TRUSS C32T8	10/ 6/71
19-AB-	0.2 INDEX & DATE PAGE	5/18/73	19-AB-953	HOIST SUPPTS	12/ 7/70	19-A -983.3AFL	TRUSS C32T8	10/ 6/71
19-AB-	0.3 INDEX & DATE PAGE	5/18/73	19-AB-954	HOIST SUPPTS	12/ 7/70	19-A -983.4	FL.TRUSS C32T7	10/ 6/71
19- AB-	0.4 INDEX & DATE PAGE	5/18/73	19-AB-955	HOIST SUPPTS	8/11/69	19-A -983.5FL	TRUSS C32T2	10/ 6/71
19- AB-	0.5 INDEX & DATE PAGE	5/18/73	19-AB-956	HOIST SUPPTS	8/11/69	19-A -983.6FL	TRUSS C32T3	10/ 6/71
19-AB-	1 GEN NOTES	3/12/69	19-AB-957	BEAM SEAT 7&9	8/20/69	19-A -983.7FL	TRUSS C3/T9	10/ 6/71
19-A -900	DETAIL 900	8/15/68	19-AB-958	DAMPER CONN	8/20/69	19-A -983.8FL	TRUSS C32T10	10/ 6/71
19-A -901	DETAIL 901	8/15/68	19-AB-959	EXT. WALL	9/ 2/69	19-A -983.9FL	TRUSS C32T11	10/ 6/71
19-A -903	DETAIL 903	8/15/68	19-A -961.1	STR/RPR.FL25.12/	1/69	19-A -983.10FL	TRUSS C32T4	10/ 6/71
<del>19-A -904</del>	<del>DETAIL 904</del>	<del>8/15/68</del>	19-A -961.2	STUD RP.FL25.12/	1/69	19-A -983.11FL	TRUSS C32T13&T6	10/ 6/71
19-A -905	DETAIL 905	8/15/68	19-A -961.3	STUD RP.FL25.12/	1/69	19-A -983.12FL	TRUSS C32T5&T12	10/ 6/71
19-A -906	DETAIL 906	8/15/68	19- B-962	MODI DK SHF	7/27/70	19-A -984.1FL	TRUSS FL.106	10/ 6/71
19-A -907	DETAIL 907	8/15/68	19- B-965	MODI TO BEAM	4/28/70	19-A -984.2FL	TRUSS FL.106	10/ 6/71
19-A -908	DETAIL 908	8/15/68	19- B-966	FL. TRUSS DET	5/11/70	19-A -984.3FL	TRUSS FL.106	10/ 6/71
19-A -909	DETAIL 909	8/15/68	19- B-967	FL107 BM REINF	6/17/70	19-A -984.4FL	TRUSS FL.106	10/ 6/71
19-A -910	DETAIL 910	8/15/68	19- B-968	BM SEAT REP.	8/ 3/70	19-A -984.5FL	TRUSS FL.106	10/ 6/71
19-A -911	DETAIL 911	8/15/68	19-A -969.1	LOUV SUPPTS	8/ 7/70	19-A -984.6FL	TRUSS FL.106	10/ 6/71
19-AB-912	DETAIL 912	10/ 7/68	19-A -969.2	LOUV SUPPTS	8/ 7/70	19-A -985.1TRUSS	DET-FL106	10/ 6/71
19-B -913	DETAIL 913	10/ 9/68	19-A -970.1	REP OPNG FL7	8/ 7/70	19-A -985.2TRUSS	DET-FL106	10/ 6/71
19-A -914	DETAIL 914	11/20/68	19-A -970.2	REP OPNG FL7	8/ 7/70	19-A -985.3TRUSS	DET-FL106	10/ 6/71
19-AB-915	DETAIL 915	11/29/68	19-A -971	REP SEP BEAM	9/25/70	19-A -985.4TRUSS	DET-FL106	10/ 6/71
19-B -916	DETAIL 916	1/ 3/69	19-A -972	FL.77 CONC.	8/25/70	19-A -985.5TRUSS	DET-FL106	10/ 6/71
19-A -918	DETAIL 918	1/15/69	19- B-973.1	HDR DUCT FL44	9/28/70	19-A -985.6TRUSS	DET-FL106	10/ 6/71
19-AB-919	DETAIL 919	1/17/69	19- B-973.2	HDR DUCT FL44	9/28/70	19-A -985.7TRUSS	DET-FL106	10/ 6/71
19-AB-920	DETAIL 920	1/17/69	19-AB-974.1	CORE COL. REINF. FL.				
19-A -921	DETAIL 921	1/27/69		98-106	12/ 1/71			
19-A -922	DETAIL 922	3/19/69	19-AB-974.2	CORE COL. REINF. FL.				
19-AB-923	DETAIL 923	3/19/69		98-106	12/ 1/71			
19-AB-923.1	DETAIL 923	3/19/69	19-AB-974.3	CORE COL. REINF. FL.				
19-AB-925	DETAIL 925	3/13/69		98-106	12/ 1/71			
19-A -926	DETAIL 926	3/14/69	19- B-975	BM REP.FL59&92	10/28/70			
19-AB-927	DETAIL 927	3/21/69	19-A -980	TEMP TRUSS	1/ 7/71			
19- B-928	DETAIL 928	5/ 9/69	19-A -981.1	FL CONN DET	1/ 7/71			
19-A -929	FL 2 TOWER A	6/13/69	19-A -981.2	FL CONN DET	1/ 7/71			
19-K -929.1	REV.TROLLEY BM.SUPPT.		19-A -981.3	FL CONN DET	1/ 7/71			
19-K -929.2	REV.TROLLEY BM.SUPPT.		19-A -982.1	FL 106 BM CPL	1/ 7/71			
19-AB-930	DETAIL E 53	6/10/69	19-A -982.2	FL 106 BM CPL	1/ 7/71			
19-AB-931	DETAIL 931	6/10/69	19-A -983.1	FL.TRUSS C32T1	10/ 6/71			
19-J -932	DETAIL H	6/20/69	19-A -983.1AFL	TRUSS C32T1	10/ 6/71			
19-AB-951.1	HOIST SUPPTS	12/ 7/70	19-A -983.1BFL	TRUSS C32T1	10/ 6/71			
19-AB-951.2	HOIST SUPPTS	12/ 7/70	19-A -983.2	FL.TRUSS C32T1	10/ 6/71			
19-AB-951.3	HOIST SUPPTS	12/ 7/70	19-A -983.2AFL	TRUSS C32T1	10/ 6/71			
19-AB-951.4	HOIST SUPPTS	12/ 7/70						

19-A-981.0 11/30/79  
19-A-981-X 10/15/79  
19-A-982.3 10/15/79

19-A-983.4A 5/9/79  
19-A-984.7 5/9/79  
19-A-984.8 1/30/80





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PROJECT THE WORLD TRADE CENTER

TITLE DRAWING BOOK 19 - REVISIONS AFTER FABRICATION

DATE 5/18/73

REVISIONS

DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE
19-A -985.8TRUSS DET-FL106		10/ 6/71	19-A -995 FLD.REP.SPANDL.EL.310		3/19/71	19- K-1047.2PLAZA LEVEL SECTIONS		10/ 7/71
19-A -985.9TRUSS DET-FL106		10/ 6/71	19-AB-996.1TRUSS BOT.CHD.BM.CONN		4/15/71	19-J-1048.1KEY PLAN FOR LOCATION OF LEGS		10/ 1/71
19-A -985.10TRUSS DETAILS-FL.106		VOID	19-AB-996.2TRUSS BOT.CHD.BM.CONN		4/15/71	19-J-1048.2KEY PLAN FOR LOCATION OF LEGS		10/ 1/71
19-A -986 FL.106 STUD DETAILS		1/ 7/71	19-AB-998 NEW PLK.WALL SUPPT-IL		6/ 8/71	19-J-1048.3NOTES &DETAILS-CALDER STABILE		10/ 1/71
19-A -987.1FL.106 CONN.DETAILS		10/ 6/71	19-AB-999 FLD.INSTL.8MS WW LIFT		7/ 2/71	19- K-1049 SECTIONS ELEV. 332 STAIR 4		10/29/71
19-A -987.2FL.106 CONN.DETAILS		10/ 6/71	19-A -1001 245 A 12-9		6/ 5/69	19- K-1050 SECTIONS ELEV.332 STAIR 4		10/29/71
19-A -987.3FL.106 CONN.DETAILS		10/ 6/71	19-AB-1002 245 A 12-9		6/ 5/69	19-JK-1051.1EMRGY.GENRTR.PLATFORM EL246-6 J5&K112/ 2/71		
19-A -987.4FL.106 CONN.DETAILS		VOID	19-AB-1003 SEAT DETAIL		6/ 5/69	19-JK-1051.2EMRGY.GENRTR.PLATFORM EL246-6 J5&K112/ 2/71		
19-A -987.5FL.106 CONN.DETAILS		VOID	19-AB-1004.1 COL. SPLICE		6/20/69	19- K-1052.1DETAIL FOR SHEARHEAD REPAIR		3/10/72
19-A -987.6FL.106 CONN.DETAILS		10/ 6/71	19-AB-1004.2 COL. SPLICE		6/20/69	19- K-1052.2BEAM REPAIR AT ELEV. 310		12/23/71
19-A -988.1TRUSS DETAILS FL.106		VOID	19-AB-1005 SPANDREL SPL.		6/20/69	19- K-1053.1REINFORCING PLATES OF EXIST.COLS12/23/71		
19-A -988.2TRUSS DETAILS FL.106		VOID	19-A -1010 PUMP PLATFORM		8/ 7/69	19- K-1053.2REINFORCING PLATES OF EXIST.COLS12/23/71		
19-A -989.1TRUSS DETAILS FL.106		VOID	19-AB-1011 PUMP PLATFORM		8/29/69	19- K-1053.3REINFORCING PLATES OF EXIST.COLS12/23/71		
19-A -989.2TRUSS DETAILS FL.106		VOID	19-B -1012 PUMP PLATFORM		8/ 7/69	19- K-1054 BASE PLATE REPAIR		2/15/72
19-A -989.3TRUSS DETAILS FL.106		VOID	19-AB-1013 PUMP PLATFORM		8/29/69	19- K-1055.1DETAIL FOR SHEARHEAD COL.K43/7&K43/8		6/30/72
19-A -989.4TRUSS DETAILS-FL.106		VOID	19-J -1020 PATH TUBE		8/18/69	19- K-1055.1COL.K35/5		5/ 4/73
19-A -990.1TRUSS DETAILS FL.106		VOID	19-K -1025 STR/BM. TO G.10/17/69			19- K-1055.1COL.K31/5		8/31/72
19-A -990.2TRUSS DETAILS FL.106		VOID	19-K -1026 MODIF.230.00.11/11/69			19- K-1055.1COL.K35/4		5/ 4/73
19-A -990.3TRUSS DETAILS FL.106		VOID	19-J -1027 G. J2A & J2F.11/24/69			19- K-1055.1COL.K35/8		8/31/72
19-A -991.1LOUVER SUPPORT FL108		2/ 5/71	19-A -1030 DETAIL KITC.		VOID	19- K-1055.1COL.K35/9		8/31/72
19-A -991.2LOUVER SUPPORT FL108		2/ 5/71	19-K -1031 SUPPORT TELE.		3/16/70	19- K-1055.1COL.K37/9&K41/9		8/31/72
19- B-992 BM.ST.REP.TWR.8 FL107		3/15/71	19-K -1035 OPNG THRU BM.		6/23/70	19- K-1055.1COL.K31/6		6/30/72
19- B-993 BM.ST.REP.TWR.8 FL107		3/15/71	19-K -1036 TEMP SUPPT		8/25/70	19- K-1055.1COL.K35/6&K35/7		5/ 4/73
19- B-994 COL.SPLICE REP FL107		3/15/71	19-J -1037 DETNEW HANG		10/ 1/70	19- K-1055.1COL.K35/2		5/ 4/73
			19- K-1038 REM BMS OVER RAMP			19- K-1055.1COL.K41/8		6/30/72
			ELEV.310		12/ 4/70	19- K-1055.1COL.K35/10		8/31/72
			19- K-1039.1STEEL BEAM REPAIR		1/15/71	19- K-1055.1COL.K37/2		5/ 4/73
			ELEV.310		1/15/71	19- K-1055X		VOID
			19- K-1039.2STEEL BEAM REPAIR		1/15/71			
			ELEV.310		1/15/71			
			19-K-1040.1REP.TEMP.GDR.		EXP JT			
					1/14/71			
			19-K-1040.2REP.TEMP.GDR.		EXP JT			
					1/14/71			
			19-JK-1044 TEMP.OPNG.		310 LEVEL			
					VOID			
			19-JK-1045 EMERGENCY GENERATOR					
					7/26/71			
			19-JK-1046 REV.COL.SUPPORT					
					9/16/71			
			19- K-1047.1PLAZA LEVEL SECTIONS		10/ 7/71			

19-A-988.3 5/9/79



19-AB-0.2



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PROJECT THE WORLD TRADE CENTER

TITLE

DRAWING BOOK 19 - REVISIONS AFTER FABRICATION

DATE

5/18/73

## REVISIONS

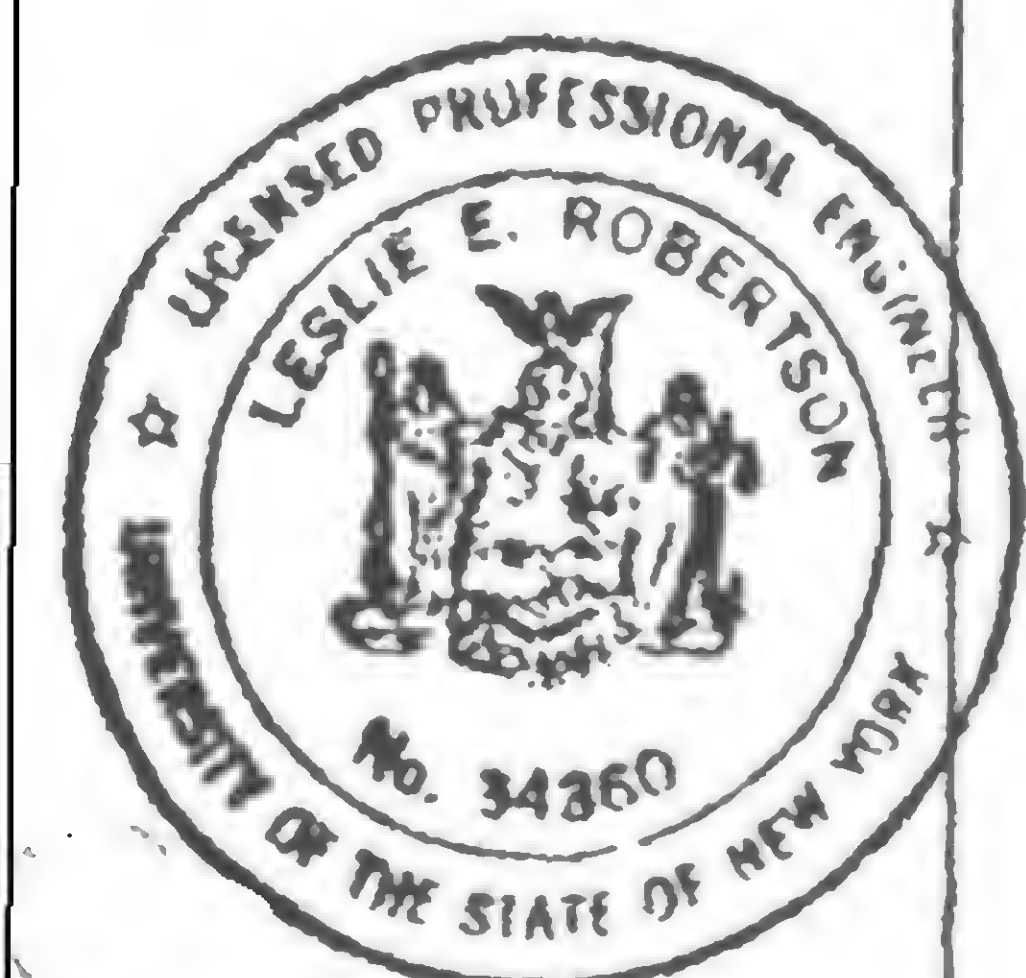
Printed 3-4-74

DWG. NO.	TITLE	DATE
19- K-1055.2	DETAIL FOR SHEARHEAD REPAIR	1/15/72
19- K-1055.2	COL.K31/3	6/30/72
19- K-1055.2	COL.K41/8	6/30/72
19- K-1055.2	COL.K31/6	6/30/72
19- K-1055.2	COL.K43/7&K43/8	6/30/72
19- K-1055.3	COL.K43/7&K43/8	10/ 5/73
19- K-1056.1	BEAM CONNECTIONS MEZZ.EL.320	10/10/72
19- K-1056.2	BEAM CONNECTIONS MEZZ.EL.320	10/10/72
<del>19- K-1056</del>	<del>BEAM CONNECTIONS MEZZ-EL.320</del>	<del>1/15/72</del>
19- K-1057	HANGER DETAILS	1/15/72
19- K-1058	REPAIR DETAIL-EL.310	1/15/72
19- K-1059	NEW COLUMN BOSOM & BEARING PLATES	1/15/72
19- K-1060	BEAM COVER PLATE-EL.332	1/15/72
19-J -1061	NEW OPENING-EL.279'3"	3/ 3/72
19-K-1062.1	EL332-ZONE K3-ELEVTRS K3,K4&K5	3/10/72
19-K-1062.2	EL332-ZONE K3-ELEVTRS K3,K4&K5	3/10/72
19-K-1062.3	EL332-ZONE K3-ELEVTRS K3,K4&K5	2/11/72
19- K-1063	TEMP.PLANKED AREA-EL.332-ZONE K1	2/16/72
19-J-1064.1	PATH-NEW STAIR	2/25/72
19-J-1064.2	PATH-NEW STAIR	2/25/72
19-J -1065	PATH-NEW STAIR	2/25/72
19-J -1066	DET.OF WALL REPAIR IN FAN ROOM	3/ 7/72
19- K-1067	PARK.ELEVATORS ZONE K-3-EL.310	3/10/72
19-K-1068.1	NEW SLAB OPNGS ZONE K1-ELEV.274	6/23/72
19-K-1068.2	NEW SLAB OPNGS ZONE K1-ELEV.274	6/23/72
19- K-1069	OPNGS IN BMS.STORM SEWER PIPES	5/12/72
19- K-1070	NEW OPNGS.EL.294	11/ 7/72

DWG. NO.	TITLE	DATE
19- K-1073	NEW OPNGS.WALLS ZONE K1,EL242	10/10/72
19- K-1074	WALL OPENING-EL284 ZONE K6	1/ 8/73
19- K-1075.1	RELOCATED PIT ZONE J6 290/294	4/12/73
19- K-1075.2	RELOCATED PIT ZONE J6 290/294	4/12/73
19- K-1076.1	EL.274,ZONE J4,RAMP J REINF.	9/ 7/73
19- K-1076.2	EL.274,ZONE J4,RAMP J REINF.	5/ 8/73
19- K-1076.3	EL.274,ZONE J4,RAMP J REINF.	5/ 8/73
19- K-1076.4	ZONE J2,RAMPJ,REINF	9/ 7/73
19- K-1076.5	EL.274,ZONE J4,RAMP J REINF.	5/24/73
19- K-1076.6	EL.274,ZONE J4,RAMP J REINF.	5/ 8/73
19-J -1077	NEW OPNG.IN SLOPING SLAB	5/15/73
19- K-1078	SHIMS AT STAIR PL2-SO TWR A-310/332	7/10/73
19- K-1079	HOLES IN BEAM-EL.320 MEZZ.ZO.K1	8/16/73
19- K-1080	REPAIR AT SLURRY WALL AT SEPB COL/BA1	10/74
19- K-1081	REPAIR AT BMENDS-332 ZONE K-3	1/ 9/74
19- K-1082	EL.332,ZONE K-5,REPR. E.FACE COL.K571	1/ 9/74
19- K-1083	EL.332,ZONE K-5,REPR. W.FACE COL.K551	1/ 9/74
19- K-1084	EL.294,ZONE K5,REPAIR AT BEAM	1/ 9/74
19- K-1085	REPAIR DETAIL FOR MIS LOCATED HANGER	1/29/74
19- K-1086	REPAIR AT TOP OF 14WF 202 DIAGONALS	1/31/74
19- K-1087	REPAIR AT SOUTH END OF 24WF100	1/31/74
19- K-1088	REPAIR AT CRACKED PL N.END OF GIRD	1/31/74
19-J -1089	NEW CURB AND BUMPER RAMP J	2/ 1/74
19- K-1090	REPAIR BASE PL-COLH4/ 9,EL332	2/28/74

DWG. NO.	TITLE	DATE
19- K-1091	ZONE K3,EL332 TOP FLG PL BTWN GIRDS	2/28/74

19-K-1092 3/11/74  
19-K-1093.1 4/8/74  
19-K-1093.2 4/8/74  
19-K-1094.1 10/21/74  
19-K-1094.2 10/21/74  
19-K-1094.3 10/21/74  
19-K-1095 4/14/75  
19-J-1096.1 4/14/75  
19-J-1096.2 4/14/75  
19-J-1096.3 4/14/75  
19-J-1097.1 12/4/75  
19-J-1097.2 12/4/75  
19-J-1097.3 9/4/75  
19-K-1098 11/20/75





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PROJECT THE WORLD TRADE CENTER

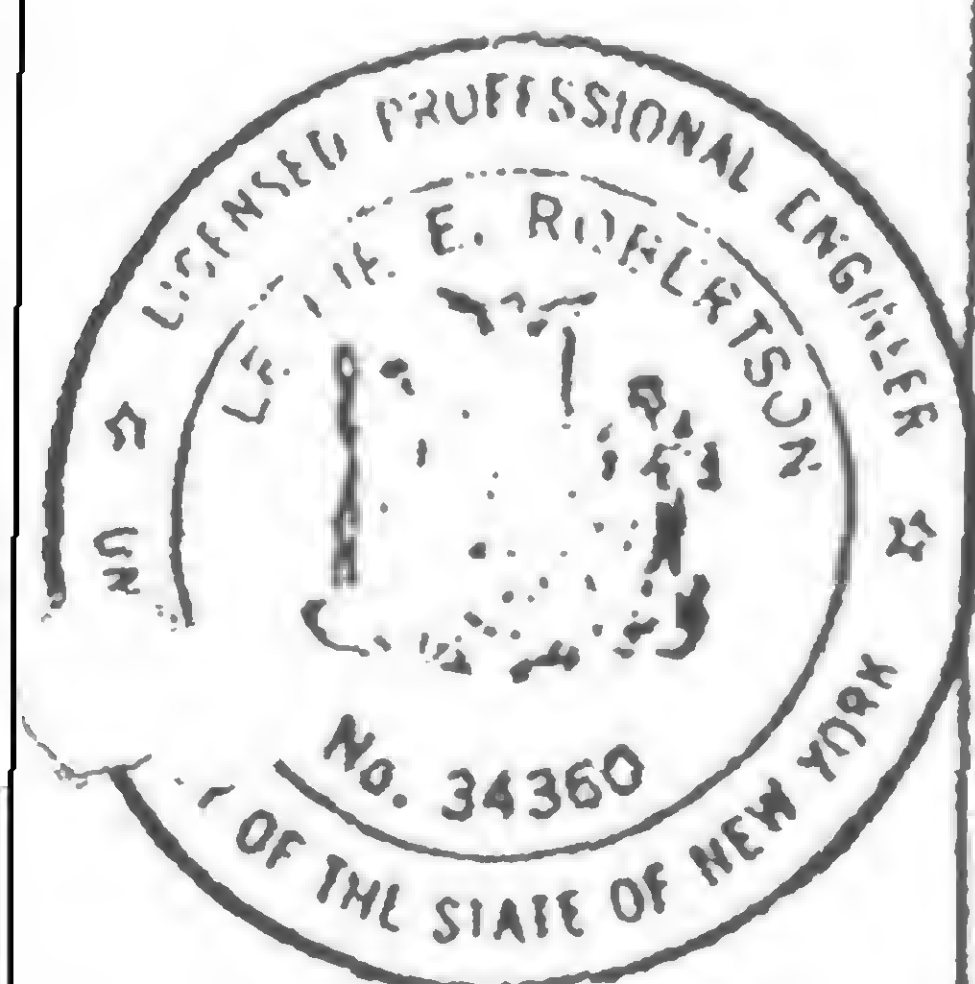
TITLE DRAWING BOOK 19 - REVISIONS AFTER FABRICATION

DATE 7/27/73

## REVISIONS

Printed 5-4-74

DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE	DWG. NO.	DATE
19-B-1100	TEL/CO REV. TWR.8 FLOORS 11&12	7/ 9/71	19-B-1108.13	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-AK-1117.3	NEW OPENING PATH KE	12/21/72	19-A-1141	2/28/74
19-B-1101	TEL/CO REV. TWR.8 EL.264-294	7/ 9/71	19-B-1108.14	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-A -1119	NEW SLAB TOWER A FL. 48	5/15/72	19-A-1142	11/14/74
19-B-1102	TEL/CO REV. TWR.8 FLOOR 7	1/12/72	19-B-1108.15	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-A -1120	ENLARGED UPNG TV TRA-NSMISSION	5/15/72	19-A-1143.1	12/16/74
19-B-1103	FLOOR 105B BUFFER BEAM	10/25/71	19-B-1108.16	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19- B-1121	PH ROOF UPPER PERIME-TER BEAM	7/17/72	19-A-1143.2	12/16/74
19-A-1104.1	TOWER A FLOOR 44-PLAN	12/10/71	19-B-1108.17	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19-A 1122.1	VOID	7/27/73	19-A-1144	12/16/74
19-A-1104.2	TOWER A FLOOR 44-SECTION	12/10/71	19-B-1108.18	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19-A 1122.2	VOID	7/27/73	19-A-1145	2/25/75
19-A-1104.3	TOWER A FLOOR 44-SECTION	12/10/71	19-B-1108.19	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19-A -1123	VOID	7/27/73	19-A-1146	2/20/75
19-A-1105.1	HEAT EXCHANGER & PUMP BASE-TWRA-43	2/18/72	19-B-1108.20	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19-A-1124.1	VOID	7/27/73	19-A-1147.1	3/20/75
19-A-1105.2	HEAT EXCHANGER & PUMP BASE-TWRA-43	2/18/7	19-B-1108.21	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19-A-1124.2	VOID	7/27/73	19-A-1147.2	3/20/75
19-B-1106.1	TELCO REVISIONS-TWR B FL.9&10	1/12/72	19-B-1108.22	TEMP.RELOCATION OF ELEV.50 MACH.	2/28/72	19-A-1125.1	VOID	7/27/73	19-A-1147.3	2/24/75
19-B-1106.2	TELCO REVISIONS-TWR B FL.11&12	1/12/72	19-B-1109.1	STRAP ANCHORS-KEYPLAN EL.264 TWR.8	1/25/72	19-A-1125.2	VOID	7/27/73	19-A-1147.4	2/24/75
19-B-1107	ENLARGE BEAM OPENING TWR B-FL.108	12/13/71	19-B-1109.2	STRAP ANCHORS-KEYPLAN EL.274 TWR.8	1/25/72	19-A -1127	VOID	7/27/73	19-A-1147.5	2/24/75
19-B-1108.1	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1109.3	STRAP ANCHOR DETS. EL 264&274 TWR.8	1/25/72	19-A -1122	DUMBWAITER PIT SUPPY. FLOOR 106	11/ 9/73	19-A-1147.6	2/24/75
19-B-1108.2	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1110	TEMP.DET. BASE PL.TWR B-COL.607&907	1/25/72	19-AB1128.1	TWRB&B LOBB.CEIL.WASH SUPPT.CORE	1/ 8/74	19-A-1147.7	2/24/75
19-B-1108.3	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1111	TEMP.BRACING TWR.B-EL 277&260'9*	1/25/72	19-AB1128.2	TWRB&B LOBB.CEIL.WASH SUPPT.PERIMET.1/	8/74	19-A-1147.8	3/20/75
19-B-1108.4	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1112.1	TOWER B-FL.106SECTION	3/ 3/72	19-AB1128.3	TWRB&B LOBB.CEIL.WASH SUPPT.CORNER	1/ 8/74	19-A-1147.9	2/24/75
19-B-1108.5	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1112.2	TOWER B-FL.106SECTION	3/ 3/72	19-AB1130.1	SLAB REPAIR-FLOOR 107 TOWER A	7/31/73	19-A-1148	4/15/75
19-B-1108.6	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19- B-1113	WINDOW WASHER DETAIL	4/19/72	19-AB1130.2	SLAB REPAIR-FLOOR 107 TOWER B	7/31/73	19-A-1149	4/15/75
19-B-1108.7	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19- B-1114	TOWER B FLOOR 10 NEW OPENING	4/20/72	19-AB1131	TWRS. A&B-FL.45 SLAB OVER OPNGS	8/ 3/73	19-A-1150.1	8/8/75
19-B-1108.8	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1115.1	TOWER B EL.284 NEW SLAB OPENING	6/12/72	19-AB1132.1	INSTALL.OMITTED SLAB TWR B/EL253	8/ 7/73	19-A-1150.2	5/23/75
19-B-1108.9	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-B-1115.2	TOWER B EL.294 NEW SLAB OPENING	6/12/72	19-AB1132.2	INSTALL.OMITTED SLAB TWR B/EL253	8/ 7/73	19-A-1150.3	5/23/75
19-B-1108.10	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-AK-1116	NEW OPENING PATH KE	12/21/72	19-AB1133	CORNER SLOPNG PARAPET PH-TWR A&B	8/17/73	19-A-1150.4	5/23/75
19-B-1108.11	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-AK-1117.1	NEW OPENING PATH KE	12/21/72	19-AB-1135	BEAM DET/CONN.AT ESCA LATOR FL.110	8/16/73	19-A-1150.5	5/23/75
19-B-1108.12	TOWER B-PH-SHAFT 50 EXTENSION	1/10/72	19-AK-1117.2	NEW OPENING PATH KE	12/21/72	19- B-1136	SHAFT WALL ANCHORAGE DETAIL	9/24/73	19-A-1150.6	8/8/75
						19-A -1137	DUMBWAITER MACHINE SUPPORT-FL.1081/	3/74	19-A-1151	9/4/75
						19- B-1138	NEW BEAM OPNG.TOWER B FL.107	1/15/74	19-A-1152	3/30/77
						19- B-1140	REPAIR TWR B OBSERVAT DECK ESCALATOR	2/27/74		



19-AB-0.4



## SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

## Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE DRAWING BOOK 19 - REVISIONS AFTER FABRICATION

DATE 5/18/73

## REVISIONS

DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE	DWG. NO.	TITLE	DATE
19-E -2001	NE BLDG.FIELD REPAIR	3/15/71	19-E -2015	NEW OPENINGS EL.332	4/10/72	19-B-2100.1	MODIF.TO P.H. ROOF	
19-E -2002	NE BLDG.FIELD REPAIR	3/22/71	19-E -2016	NEW OPENINGS EL.332	3/24/72		FRAMING PLAN	9/27/71
19-E -2003	NE BLDG.FIELD REPAIR	4/10/72	19-E -2017	NE BLDG.EL.332 CANT.	5/22/72	19-B-2100.2	MODIF.TO P.H. ROOF	
19-E -2004	NE BLDG TEMP. OPENING	7/ 9/71	19-E -2018	CONCRETE OPENING	9/18/72		FRAMING PLAN	9/27/71
19-E -2005.1	TEMP. SUPPORT FOR PIPING	11/10/71	19-E-2019	7/6/73		19-B-2100.3	MODIF.TO P.H. ROOF	
19-E -2005.1	ALT. TEMP. SUPPORT FOR PIPING	VOID					FRAMING PLAN	9/27/71
19-E -2005.2	TEMP. SUPPORT FOR PIPING	11/10/71				19-B-2100.4	MODIF.TO P.H. ROOF	
19-E -2005.2	ALT. TEMP. SUPPORT FOR PIPING	VOID					FRAMING PLAN	9/27/71
19-E -2005.3	TEMP. SUPPORT FOR PIPING	12/20/71						
19-E -2006	REPAIR FL.10 SOUTH	12/29/71						
19-E -2007.1	PIPING THRU BEAM	11/ 1/71						
19-E -2007.2	PIPING THRU BEAM	11/ 1/71						
19-E -2008	PIPING THRU BEAM	11/ 1/71						
19-E -2009	PIPING THRU BEAM	11/ 1/71						
19-E -2010.1	BEAM OPENINGS ELEV. 332	11/ 1/71						
19-E -2010.2	BEAM OPENINGS ELEV. 332	11/ 1/71						
19-E -2011	CONC. OPENINGS ELEV. 332	11/ 1/71						
19-E -2012.1	PLAZA SECT.AT BLDG. EDGE	1/21/72						
19-E -2012.2	PLAZA SECT.AT BLDG. EDGE	1/21/72						
19-E -2012.3	PLAZA SECT.AT BLDG. EDGE	1/21/72						
19-E -2012.4	PLAZA SECT.AT BLDG. EDGE	1/21/72						
19-E -2013.1	BASE PAD/TURNTABLE & CHARGE CHMBR.	2/29/72						
19-E -2013.2	BASE PAD/TURNTABLE & CHARGE CHMBR.	2/29/72						
19-E -2014	NEW OPENING-EL332 NE BUILDING	2/18/72						

19-K-2200 10/4/71

19-X3-1 6/29/73

-2.1  
-2.2  
-2.3  
-2.4  
-3.1  
-3.2  
-3.3  
-3.4  
-3.5

19-X3-3.6

19-X4-1

-2.1  
-2.2  
-2.3  
-2.4  
-3.1  
-3.2

19-X4-3.3 6/29/73



PROJECT

THE WORLD TRADE CENTER

TITLE

DRAWING BOOK 19 - REVISIONS AFTER FABRICATION - GENERAL NOTES

DATE

8/15/68

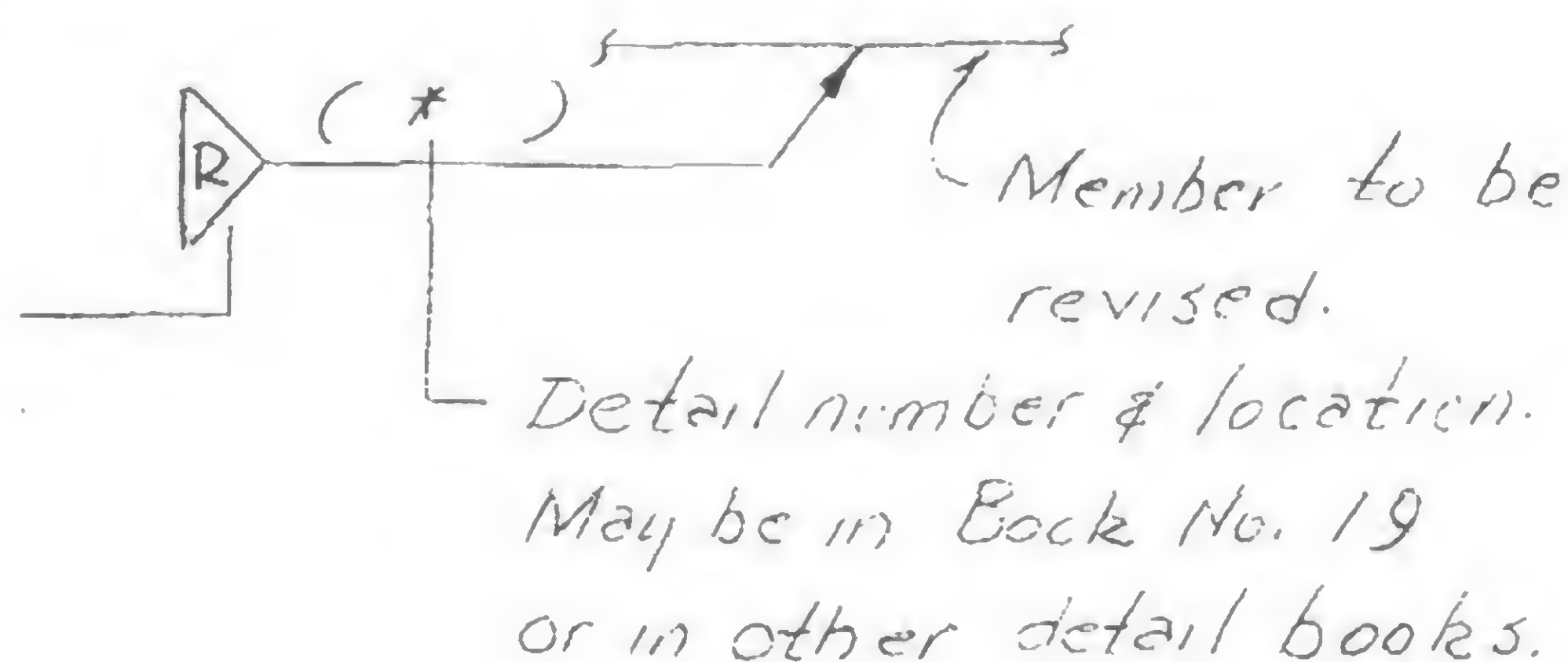
## REVISIONS

3-12-69

## GENERAL NOTES

1. The details given in Book 19 define revisions to be made to previously fabricated steel members, or to members under fabrication.
2. The location of such revisions and the detail number are shown in Structural Steel Plans, using the following symbol:

Designates  
revision after  
fabrication.



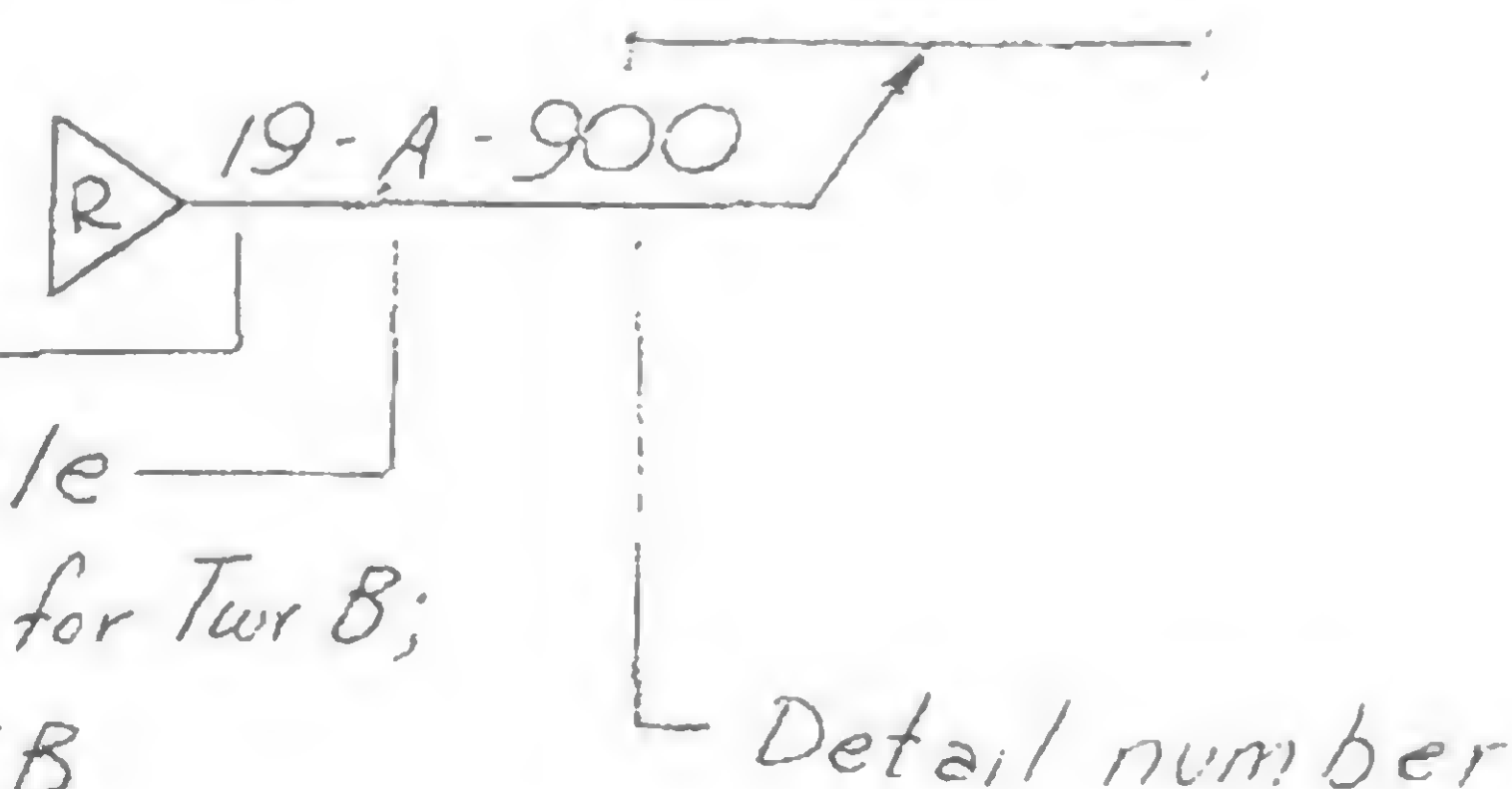
Details of revisions-after-fabrication may be given in Book 19, or in other detail books. When details are in Book 19, the symbol shown in plans reads:

Designates Book No.

Designates applicable

Tower: A for Twr A; B for Twr B;

AB for both Twrs A & B



3. Member numbers used in the details of Book 19 are the member numbers shown in Erection Plans and other shop drawings using the system:

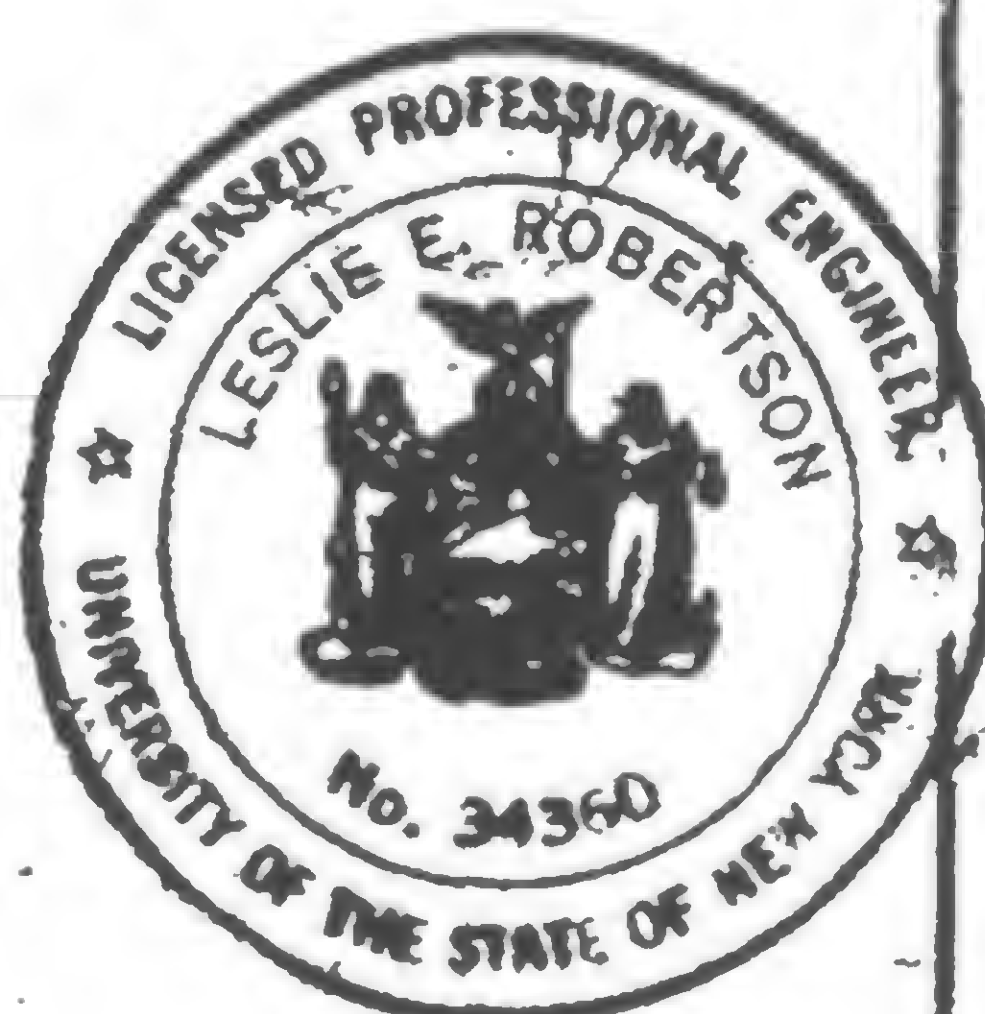
Number shown in  
Erection Plans

Suffix, or floor  
location

N (A) B

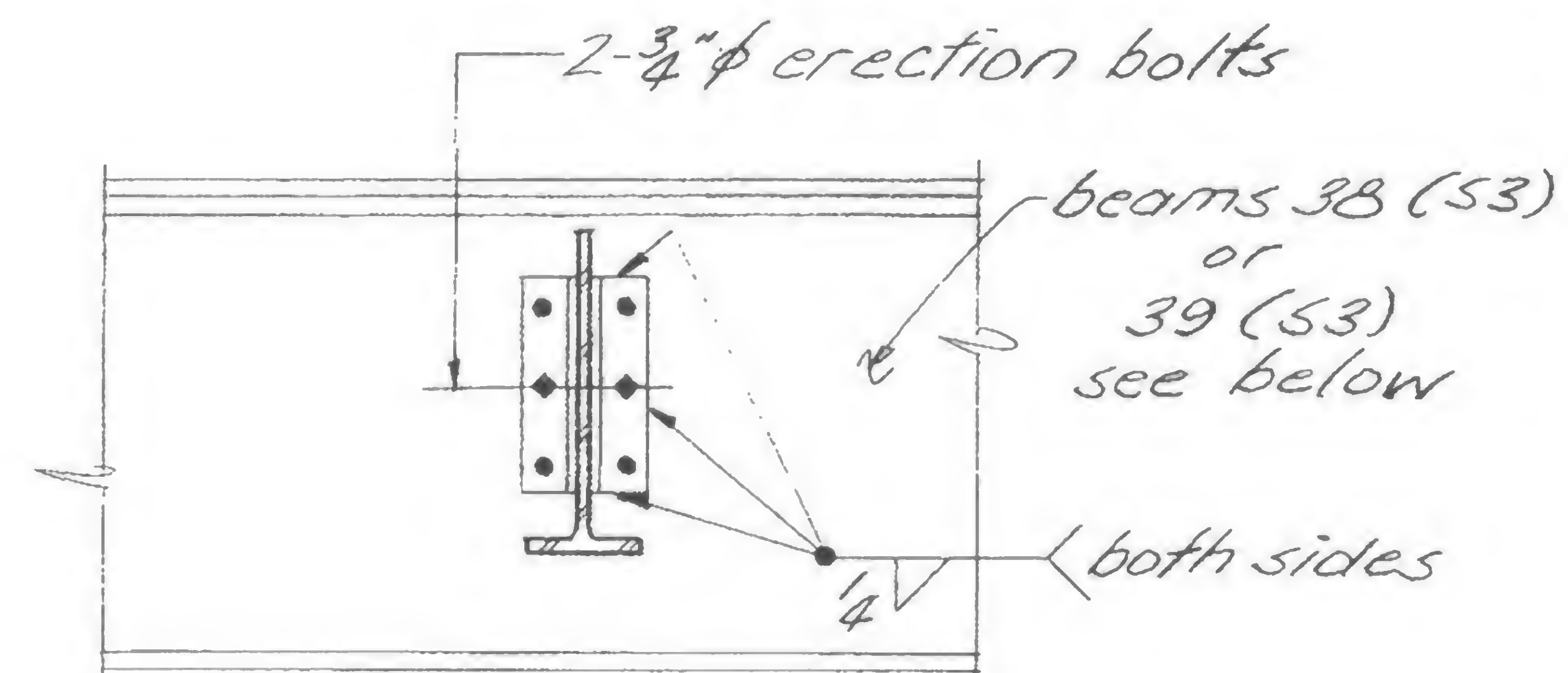
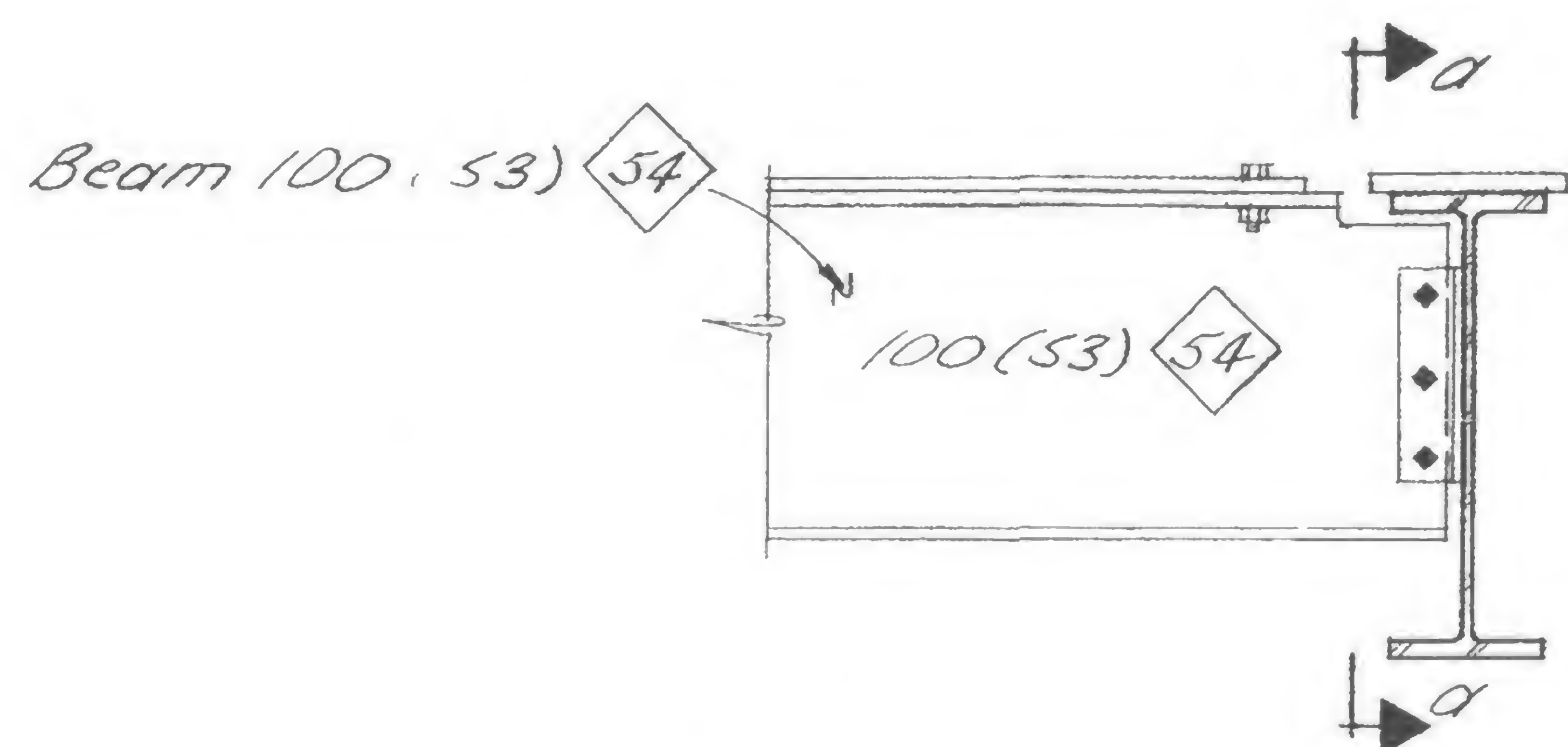
Derrick Division

4. Revisions after fabrication shall conform to current AISC and AWS specifications for building construction, and to project drawings and specifications for the fabricated members being revised.
5. Standard AISC connections shall be used where shown in the drawings, or where member reactions are given in kips, or where connection details are not otherwise shown. Bolted connections shall have a minimum of two 3/4" Ø A325 bolts, unless otherwise shown.
6. All bolts shall be ASTM A325, friction-type, unless otherwise shown in the drawings.
7. All manual welding electrodes shall be E70XX low hydrogen, unless otherwise shown in the drawings.
8. All steel parts shall be ASTM A36, unless otherwise shown in the drawings.
9. The requirements and general notes given in the following drawings apply to the details of Book 19 when pertinent:
  - 1-A2-44
  - 5-AB1-0
  - 6-AB1-1
10. Permanent members which are gouged, cut or otherwise damaged during revision work shall be restored to their original condition. Gouges and cuts shall be repaired by filling with weld metal and grinding smooth.
11. The Contractor may propose alternate connection details using bolts in lieu of welds shown in drawings, by submitting a drawing of the alternate detail for approval. No deviation from the details originally shown in the drawings is permitted without the approval of alternate drawings.

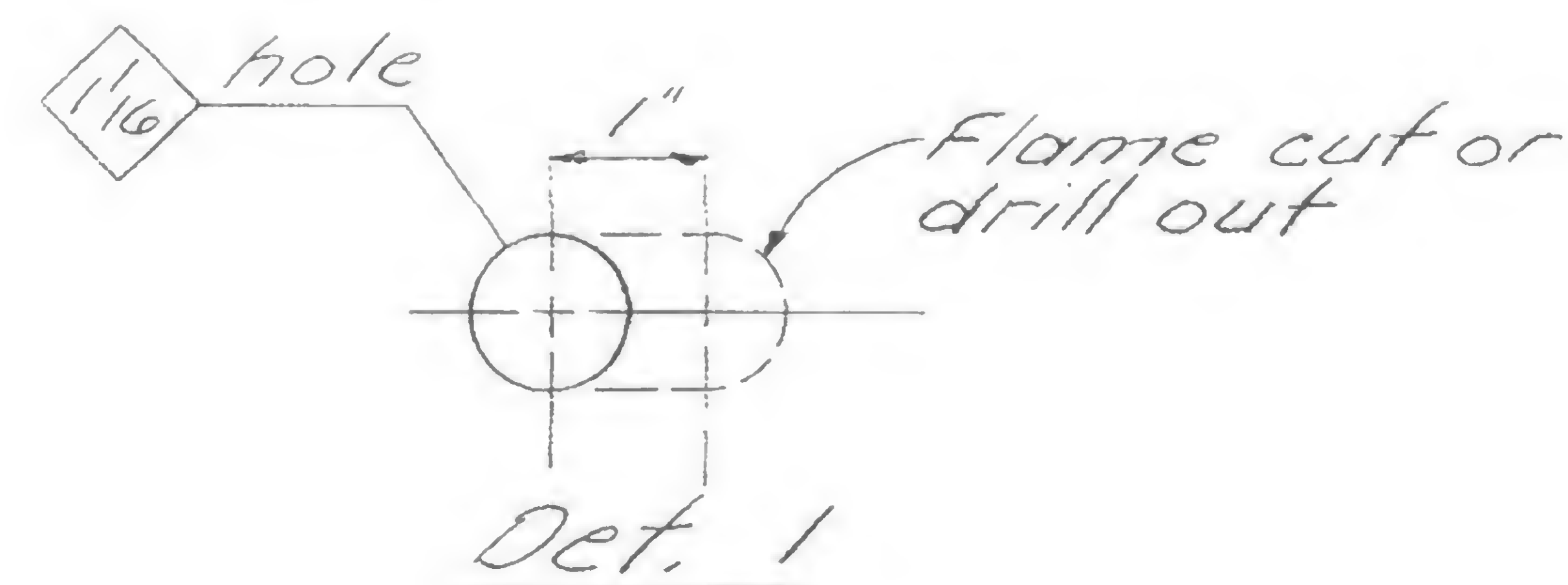
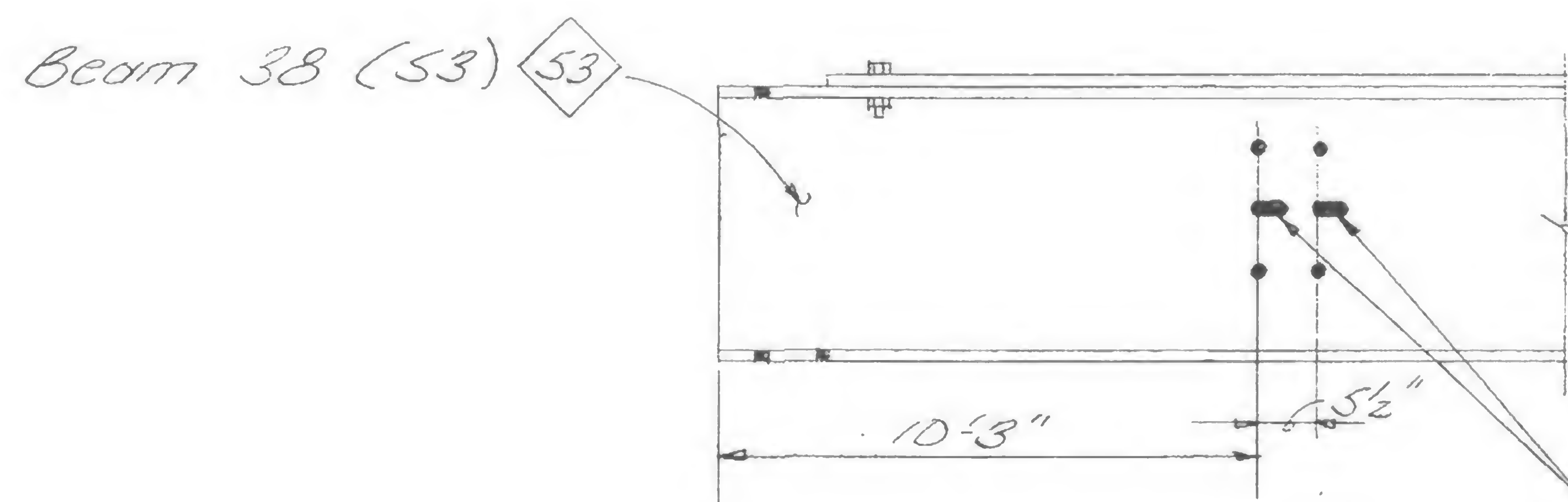




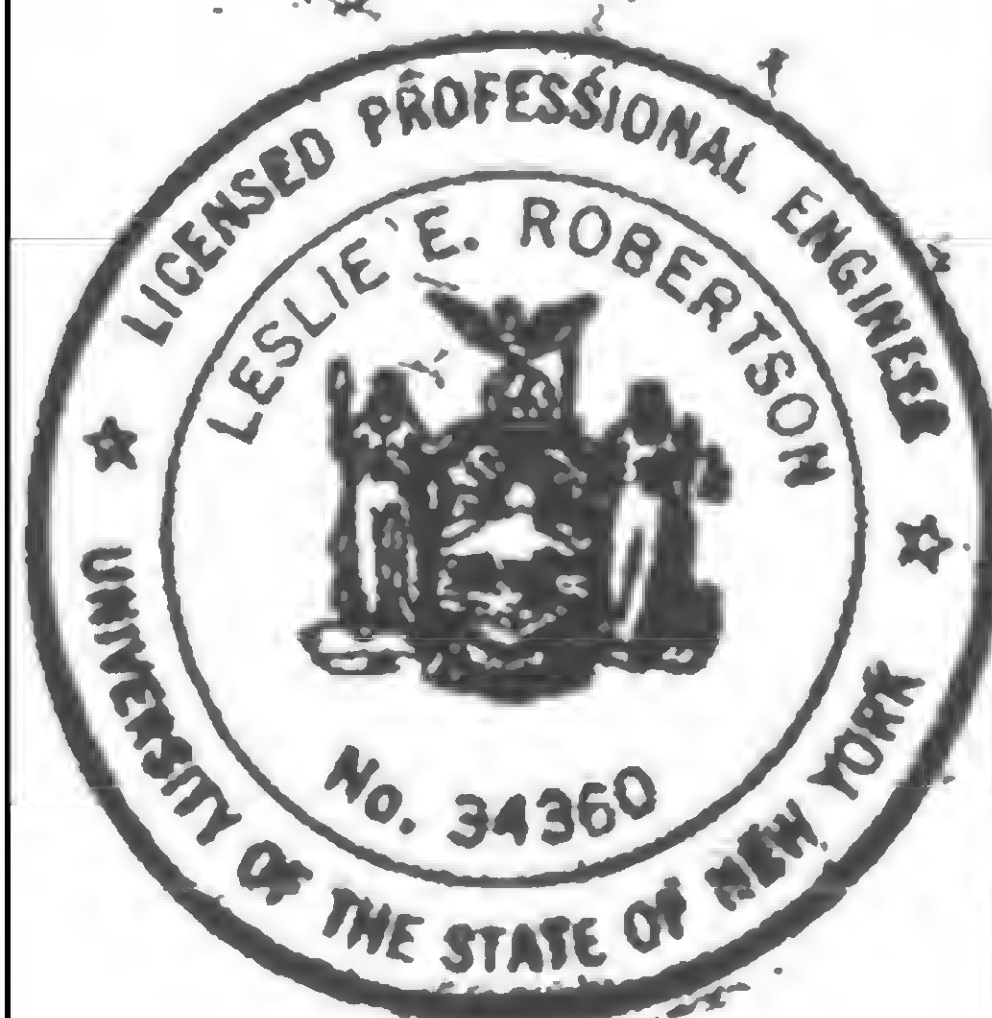
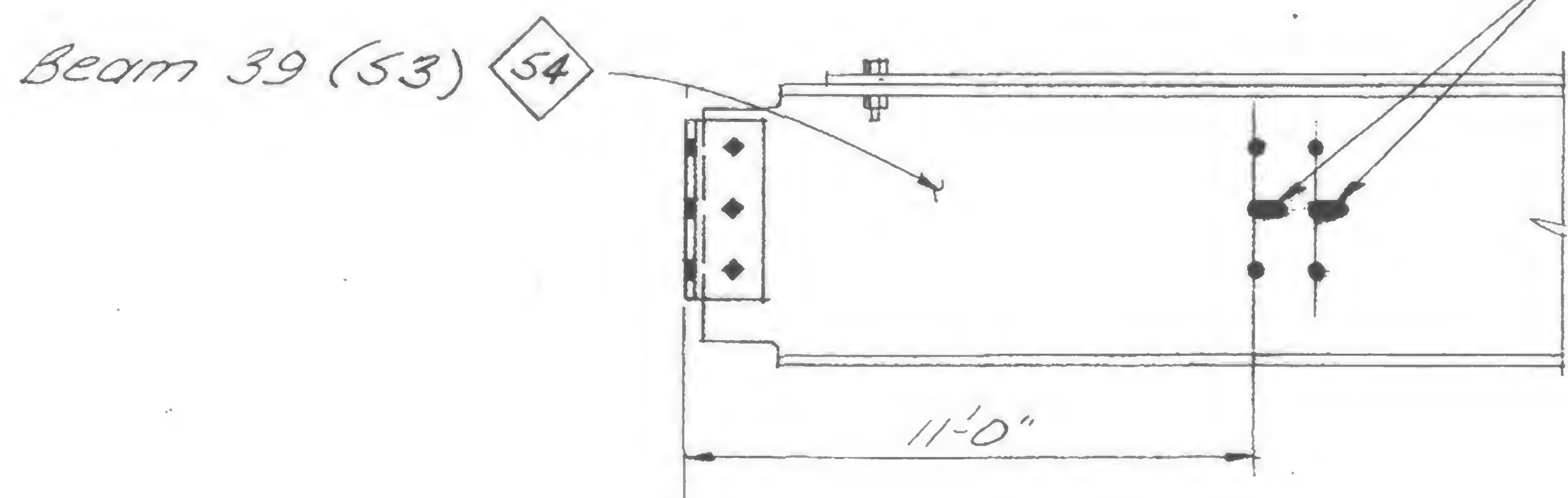
REVISIONS



Sec. a-a



Slot holes for erection bolts  
See Det. 1



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DRAWN

REVIEWED

19-A-900



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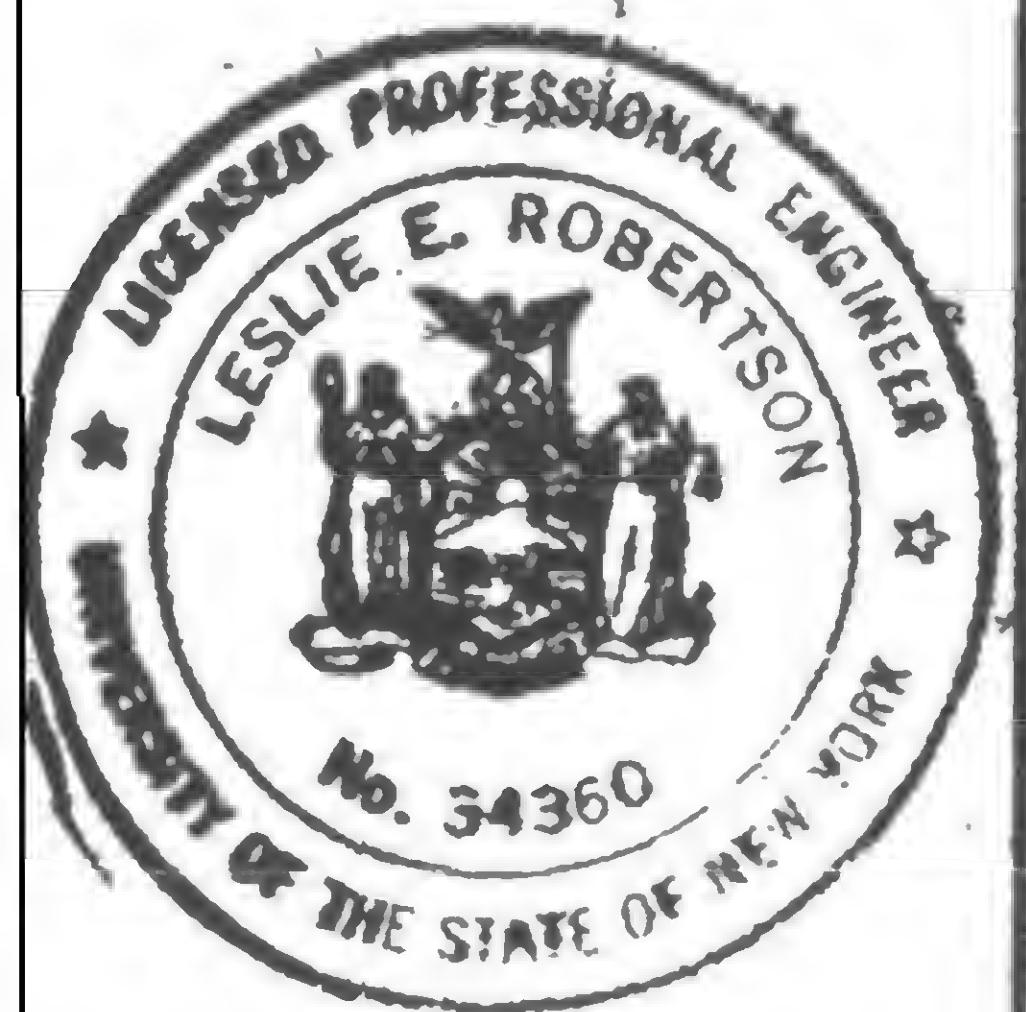
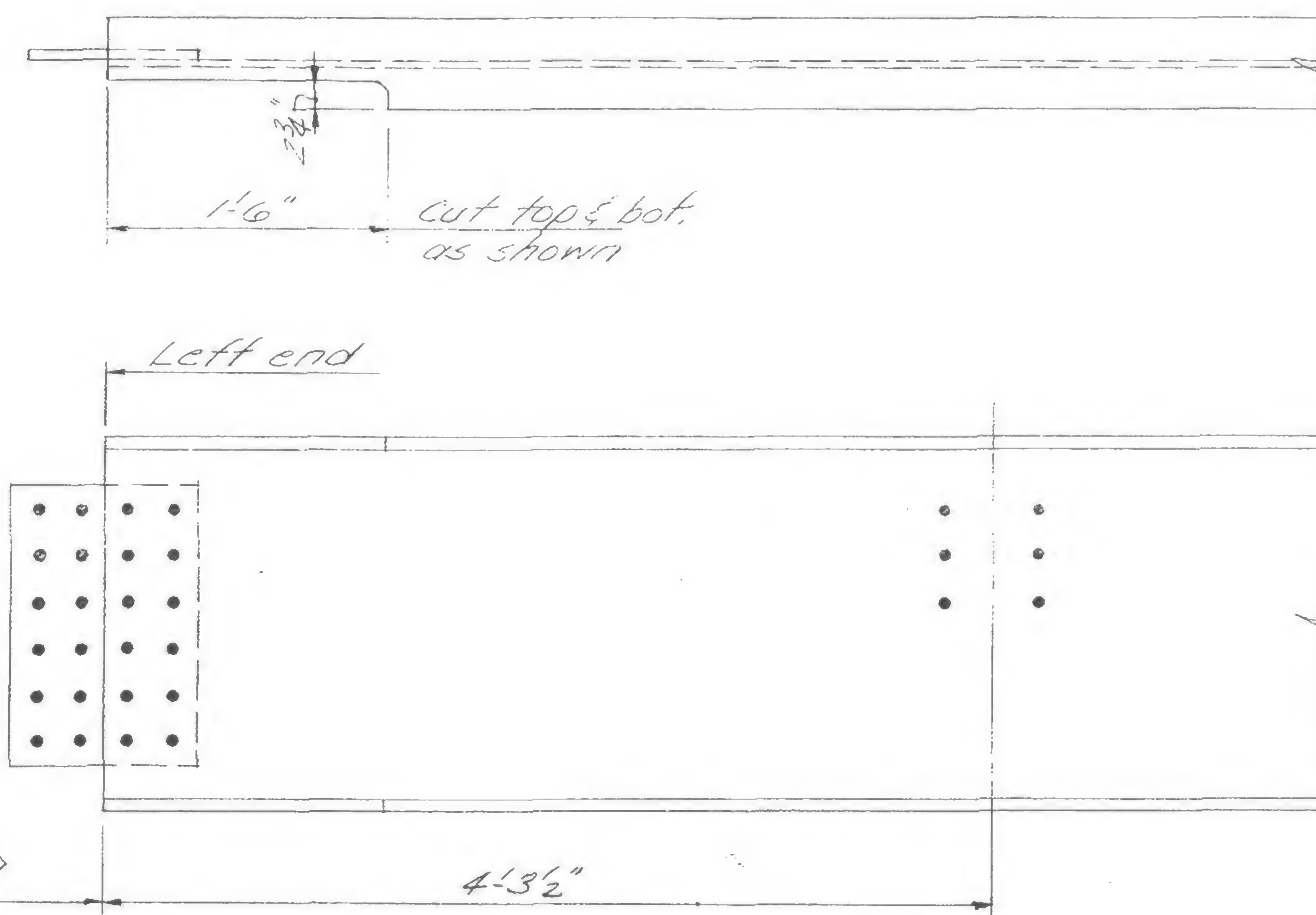
Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER*

TITLE *REVISION AFTER FABRICATION DETAIL 901*

DATE *8-15-68*

REVISIONS



DESIGNED

DRAWN

REVIEWED

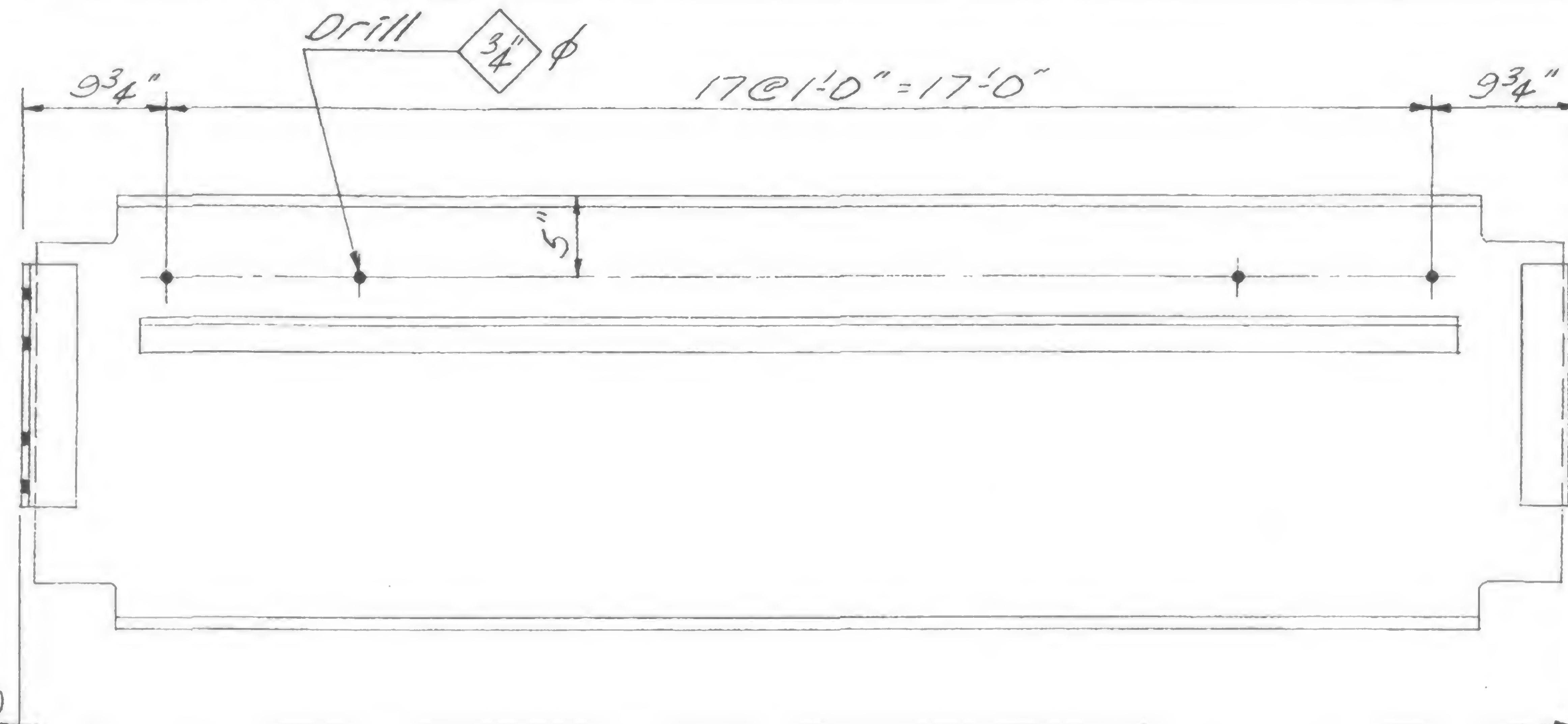
19-A-901

PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION DETAIL 903

DATE 8-15-68

## REVISIONS



One-94(SI)

96(SI)

103(SI)

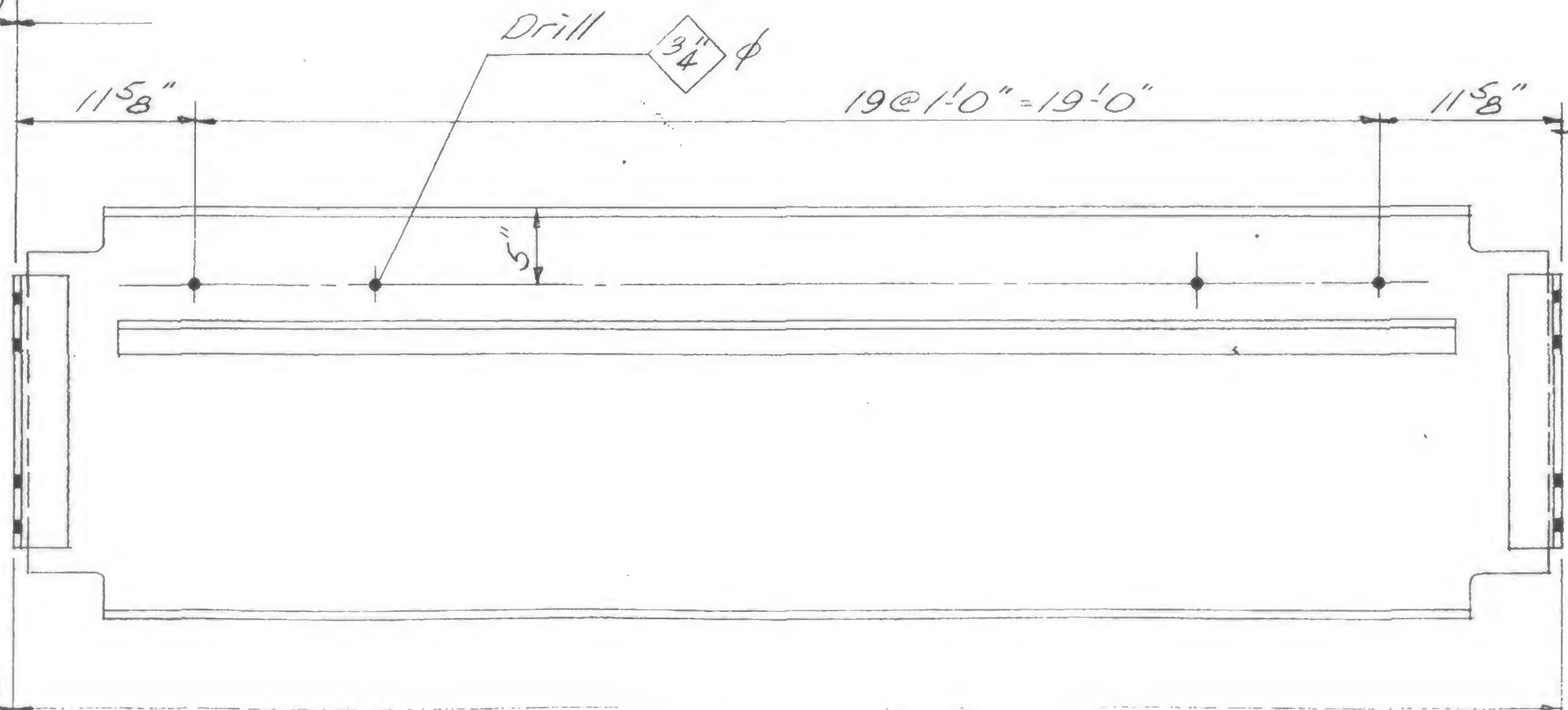
105(SI)

214(SI)

216(SI)

223(SI)

One-225(SI)



One 101(SI)

DESIGNED

DRAWN

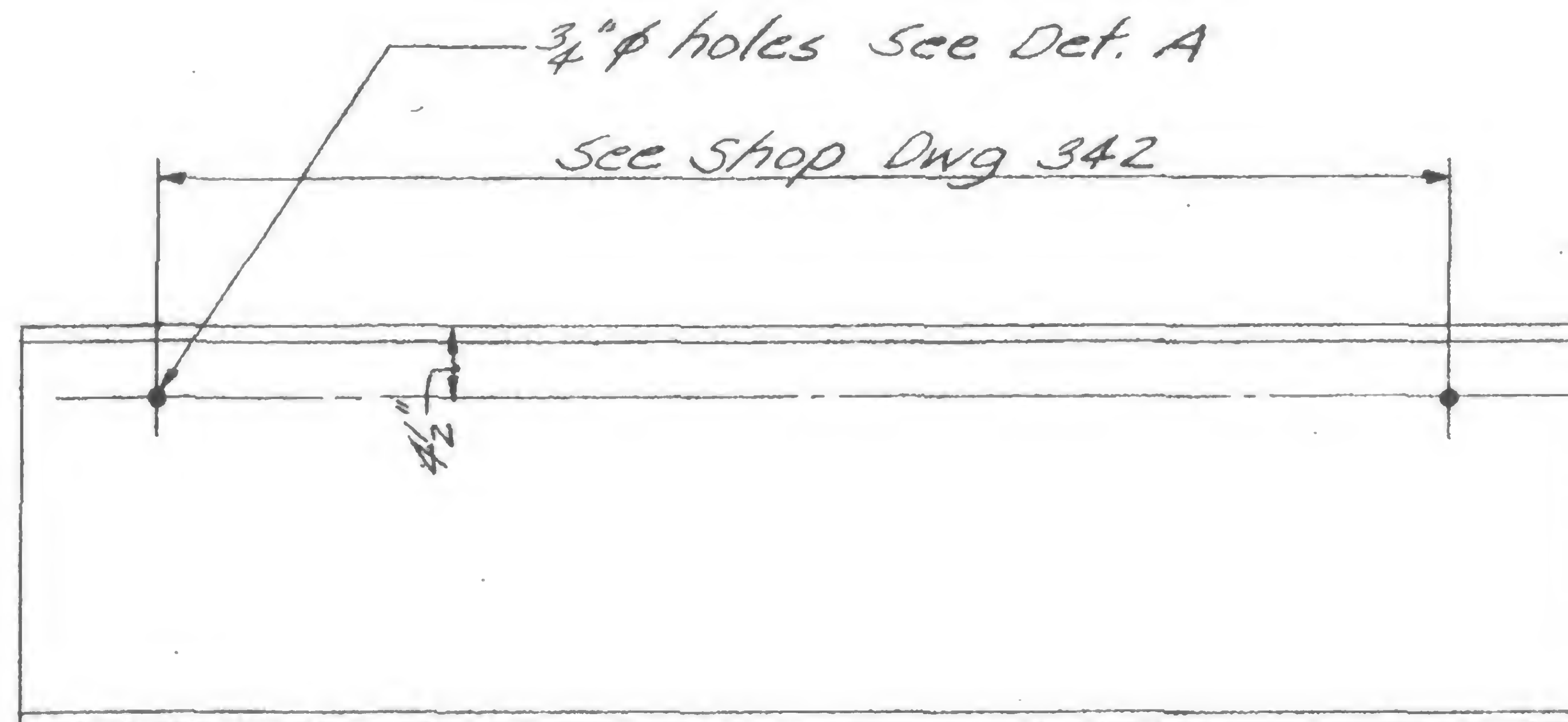
REVIEWED

19-A-903

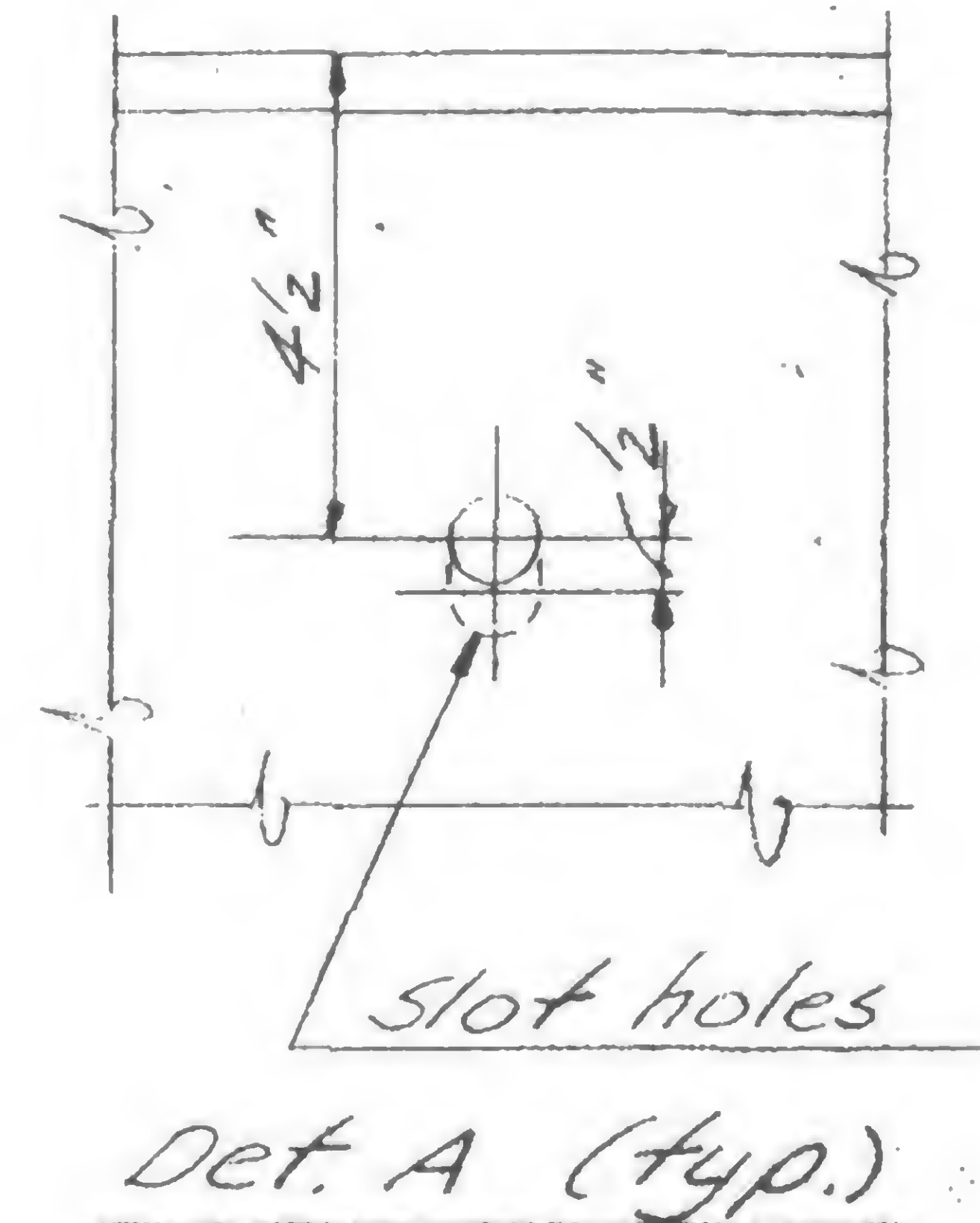




REVISIONS

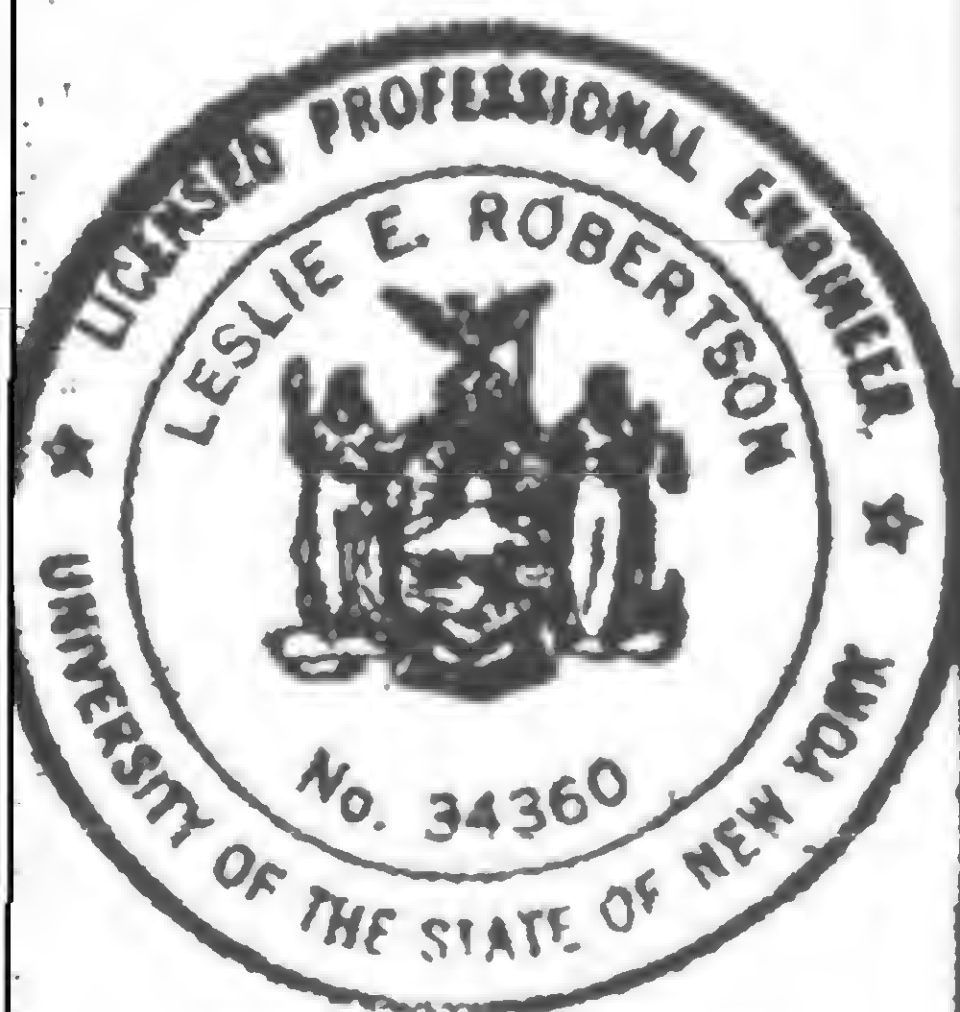


Section Y-Y on SA-6  
schedules 3/4"  $\phi$  holes at  
5" from top flange



- One 15(SI)
- 16(SI)
- 17(SI)
- 19(SI)
- 20(SI)
- 73(SI)
- 74(SI)
- 77(SI)
- 78(SI)
- 93(SI)
- 95(SI)
- 102(SI)
- 104(SI)
- 106(SI)
- 213(SI)
- 215(SI)
- 224(SI)
- One 226(SI)

deleted from  
Set before 1st  
issue - change  
Shop SA-6 045  
disapproved by  
NLC of NYA  
WBS



Deleted  
(see @ left)





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

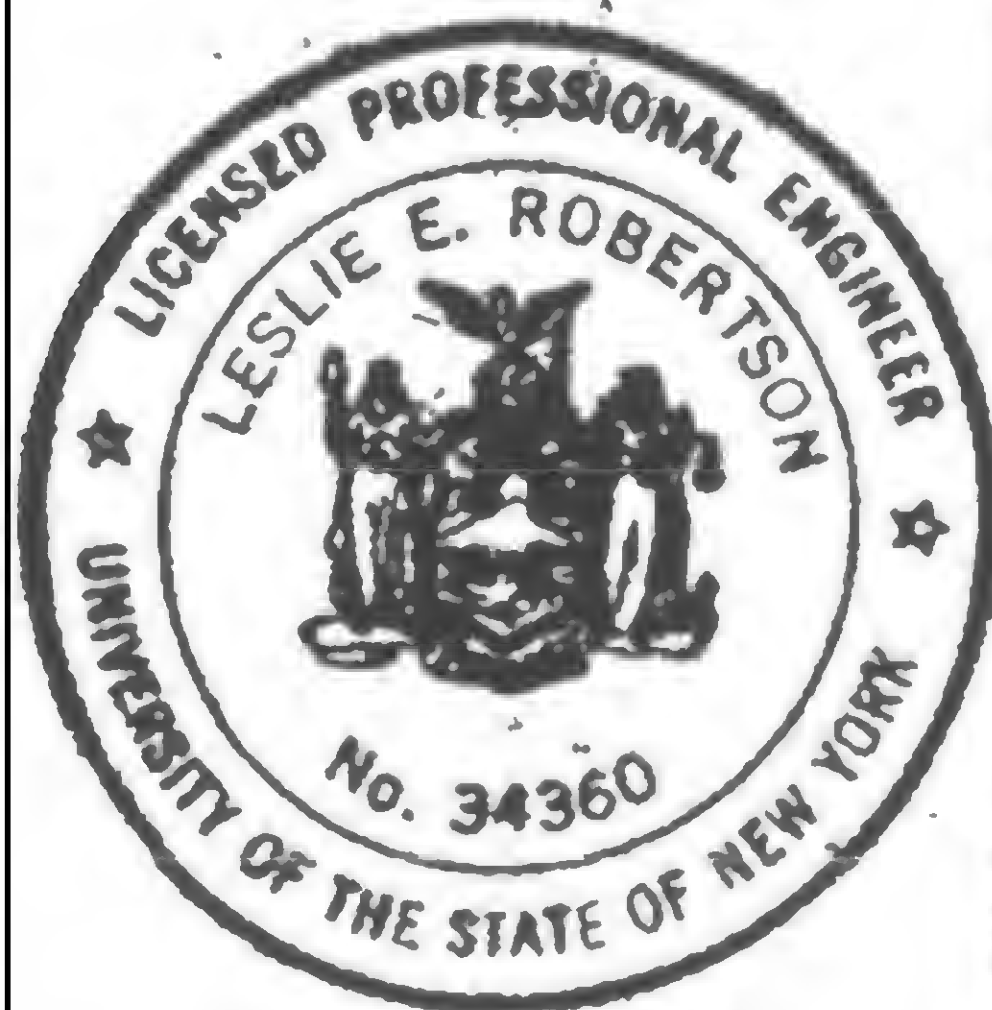
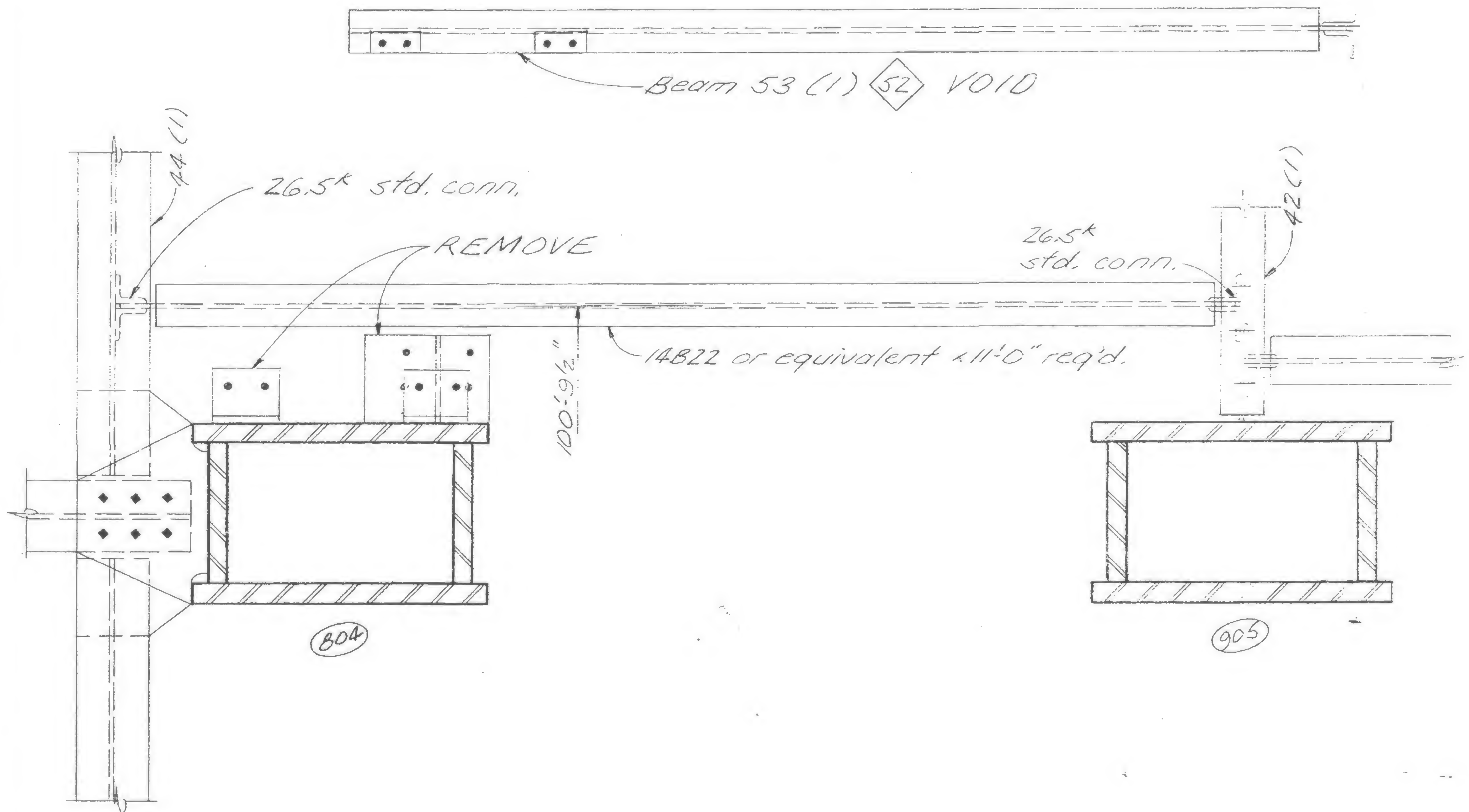
Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER*

TITLE *REVISION AFTER FABRICATION DETAIL 905*

DATE *8-15-68*

REVISIONS



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REVIEWED

19-A-905

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT

THE WORLD TRADE CENTER

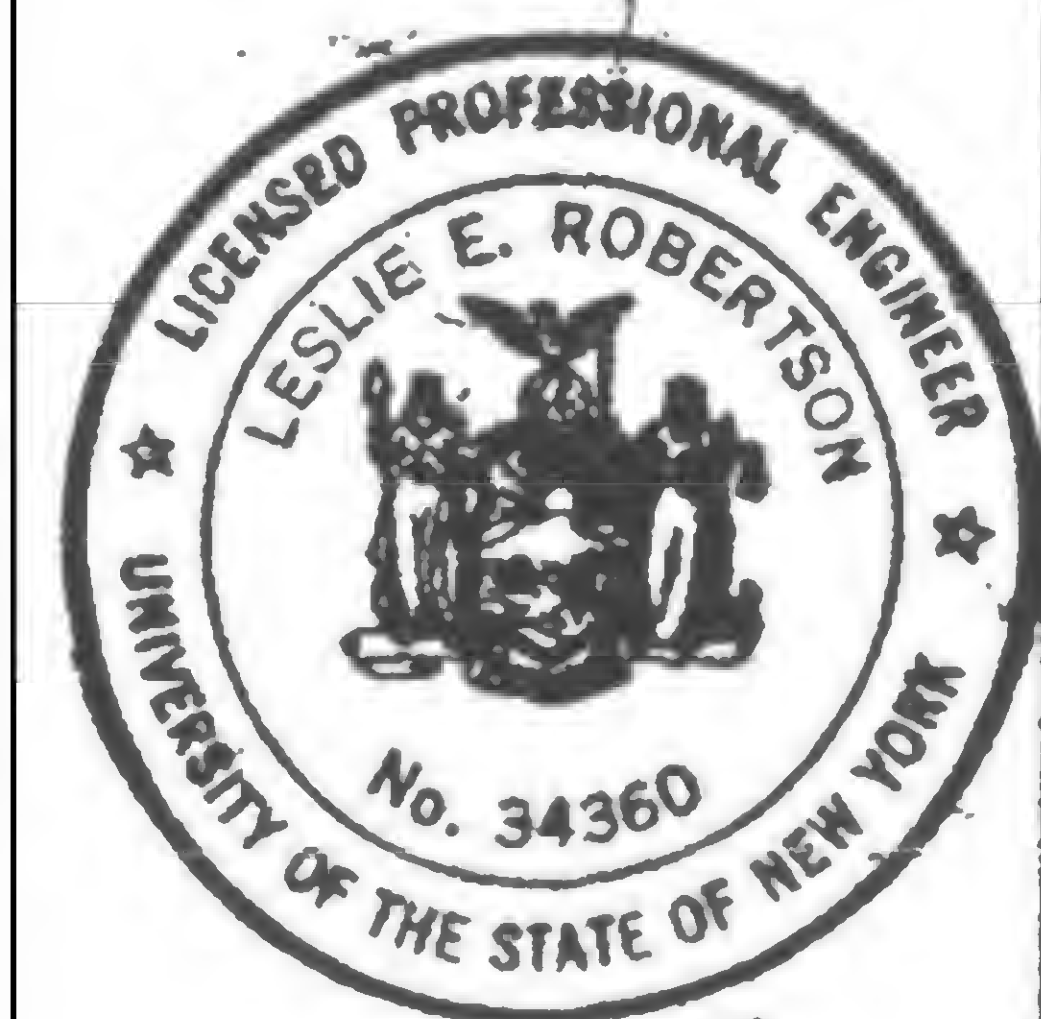
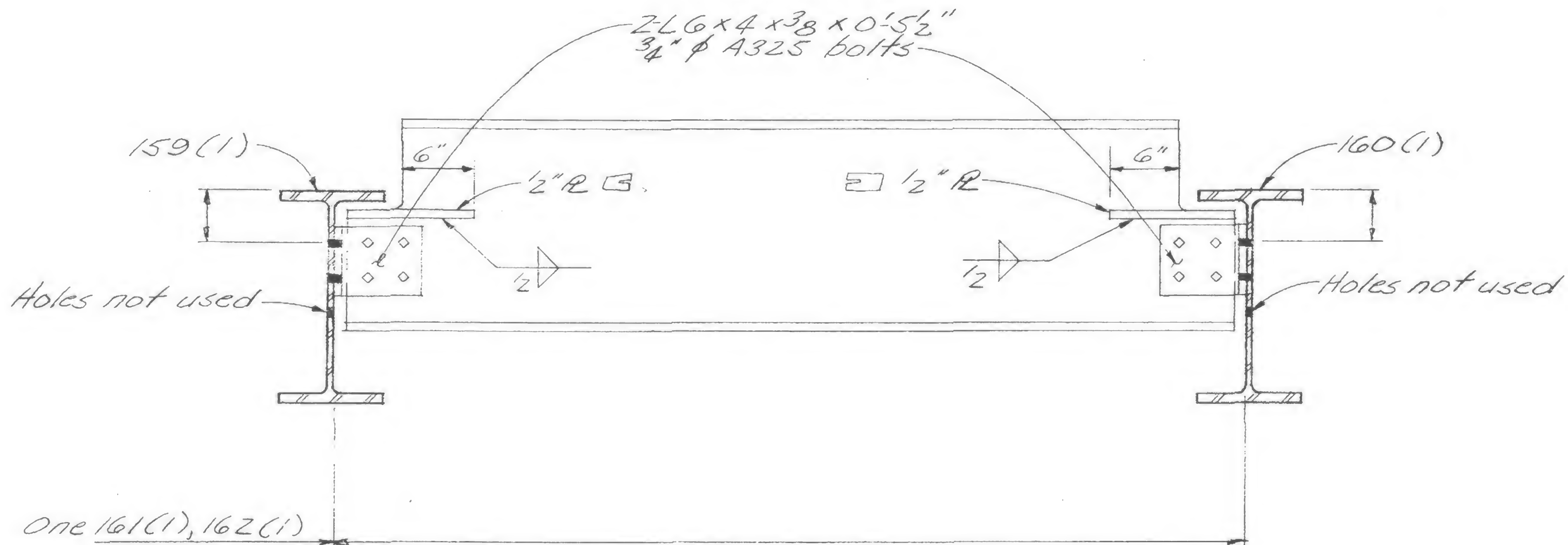
TITLE

REVISION AFTER FABRICATION DETAIL 906

DATE

8-15-68

REVISIONS



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DRAWN

REVIEWED

19-A-906



PROJECT

THE WORLD TRADE CENTER

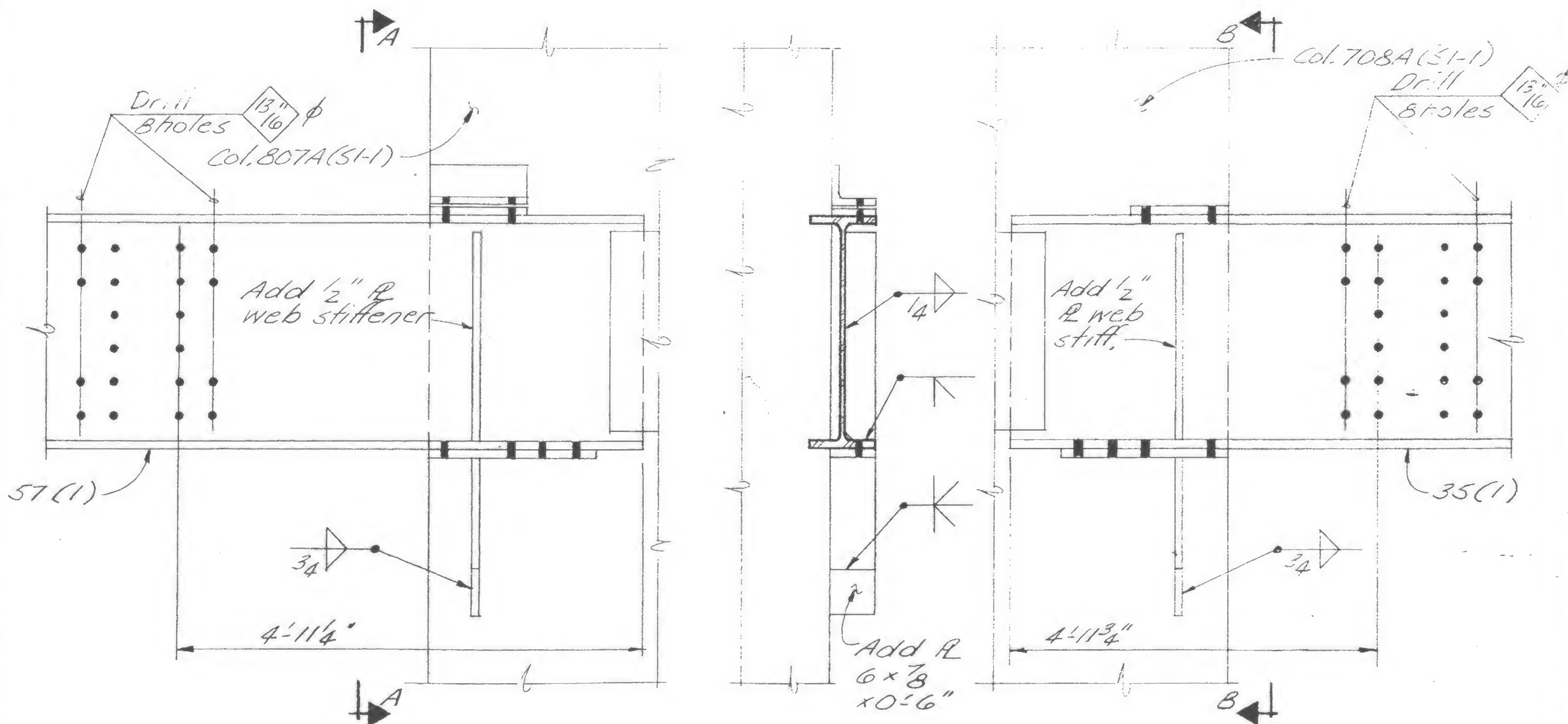
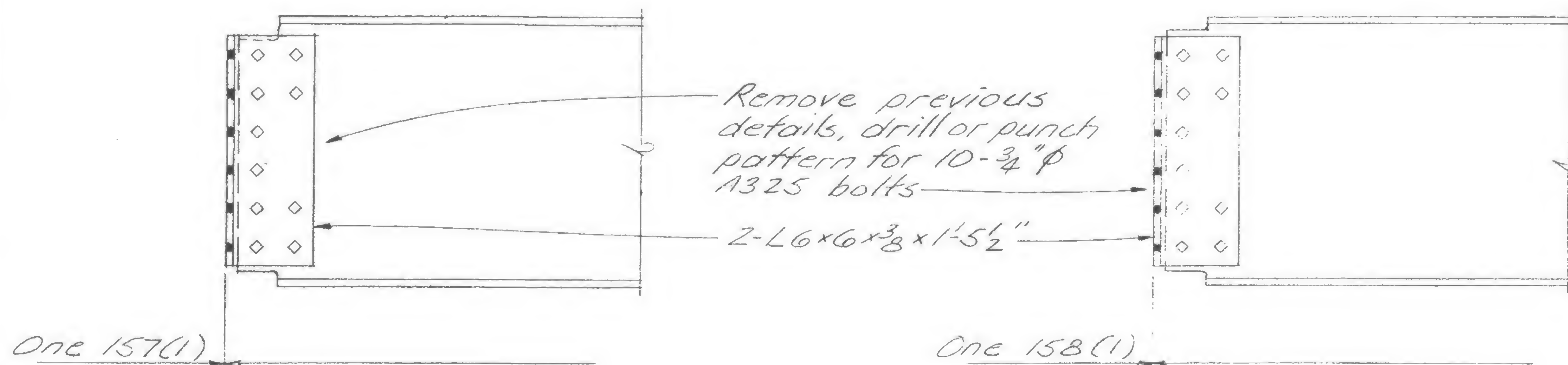
TITLE

REVISION AFTER FABRICATION DETAIL 907

DATE

8-15-68

## REVISIONS



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DRAWN

REVIEWED

19-A-907

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

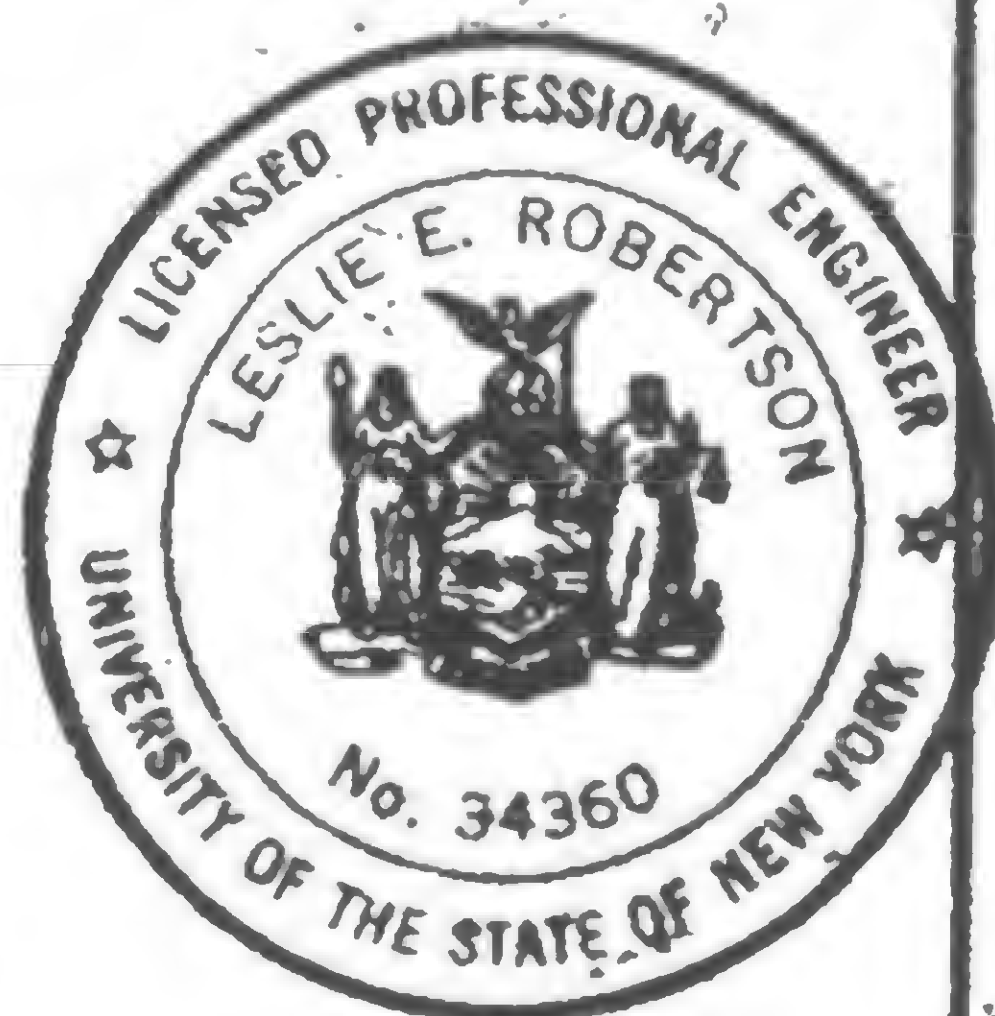
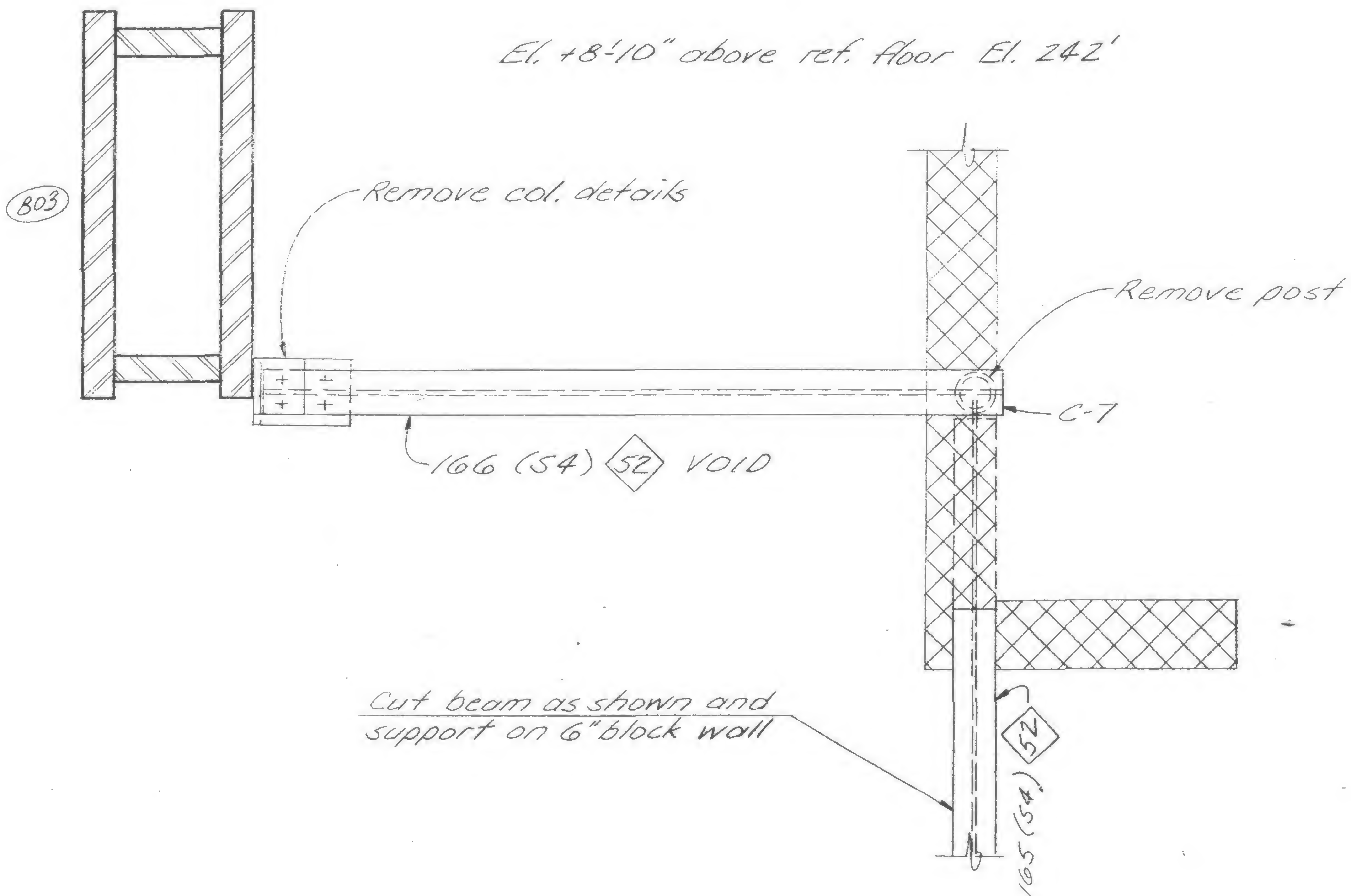
Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER*

TITLE *REVISION AFTER FABRICATION DETAIL 908*

DATE *8-15-68*

REVISIONS



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19-A-908



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

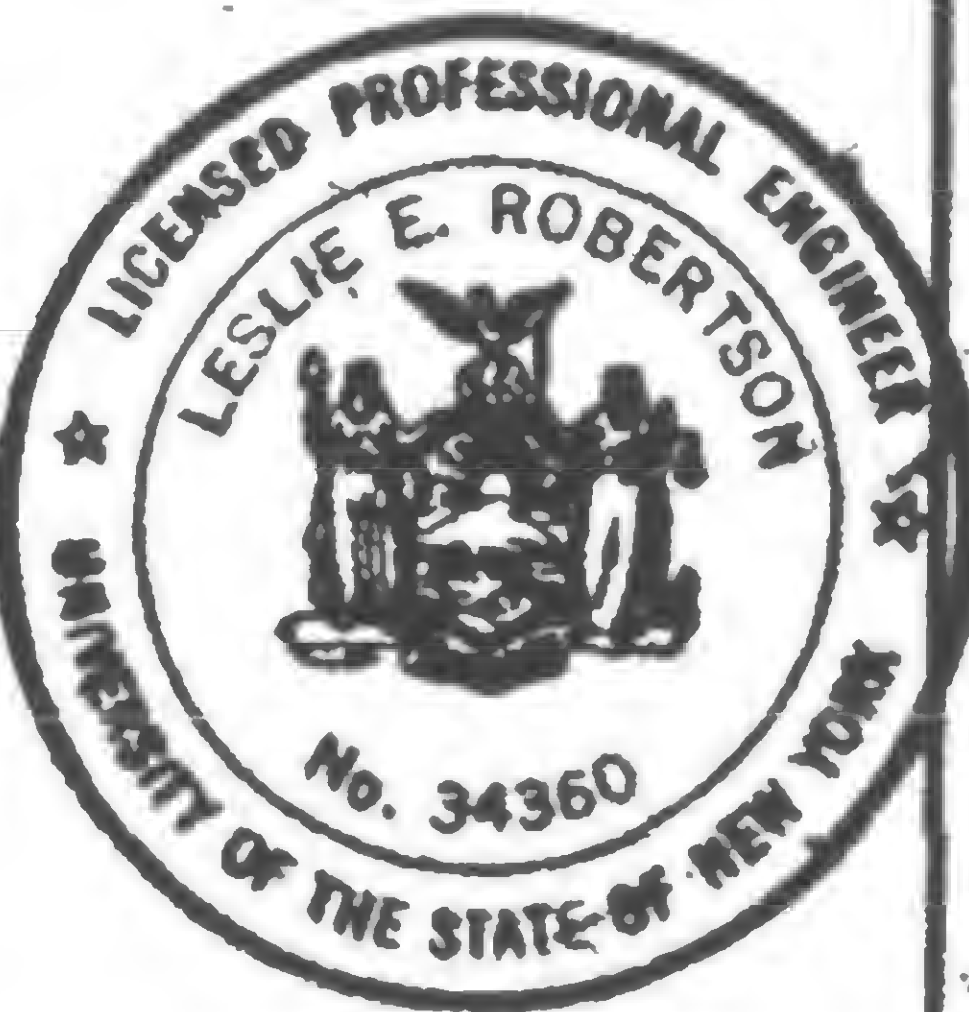
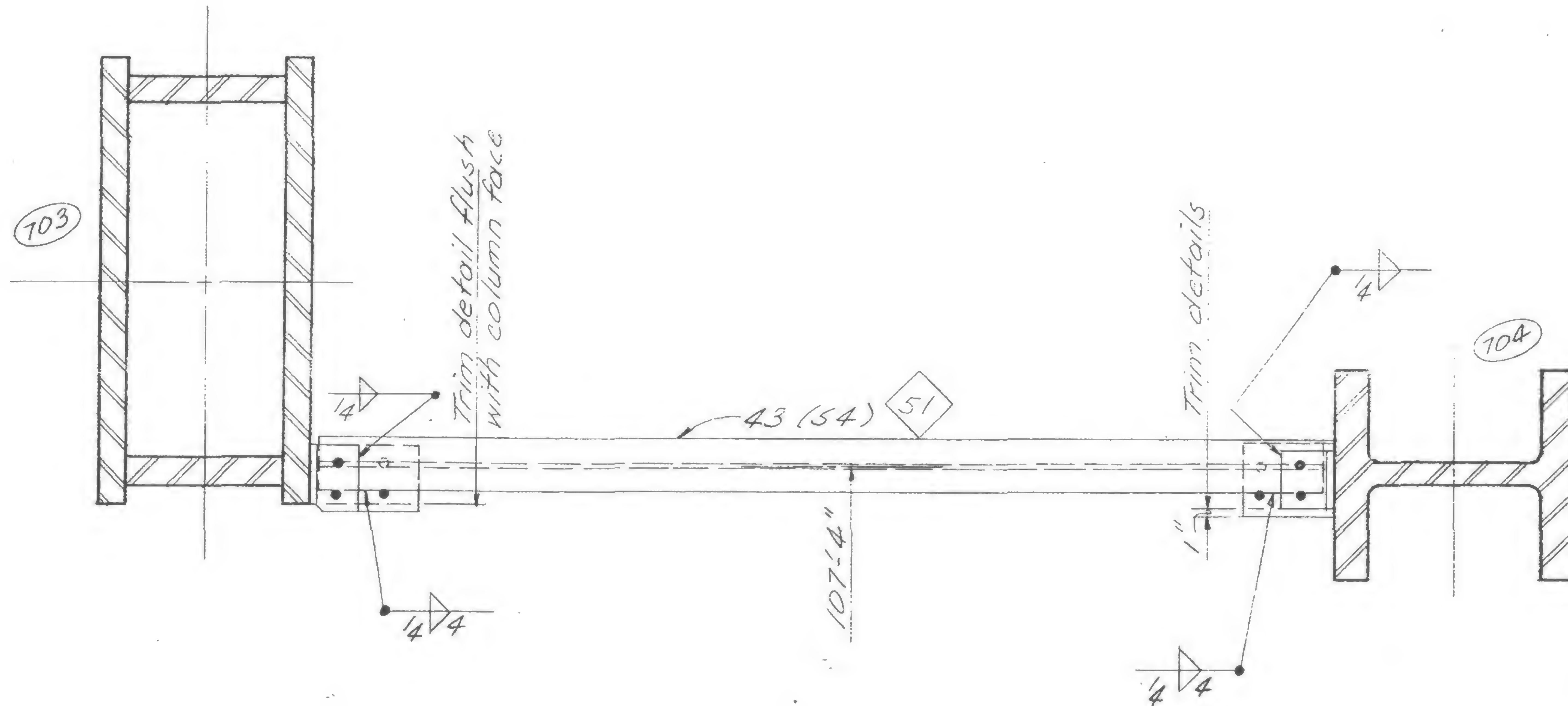
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION DETAIL 909

DATE 8-15-68

REVISIONS



DESIGNED

DRAWN

REVIEWED

19-A-909

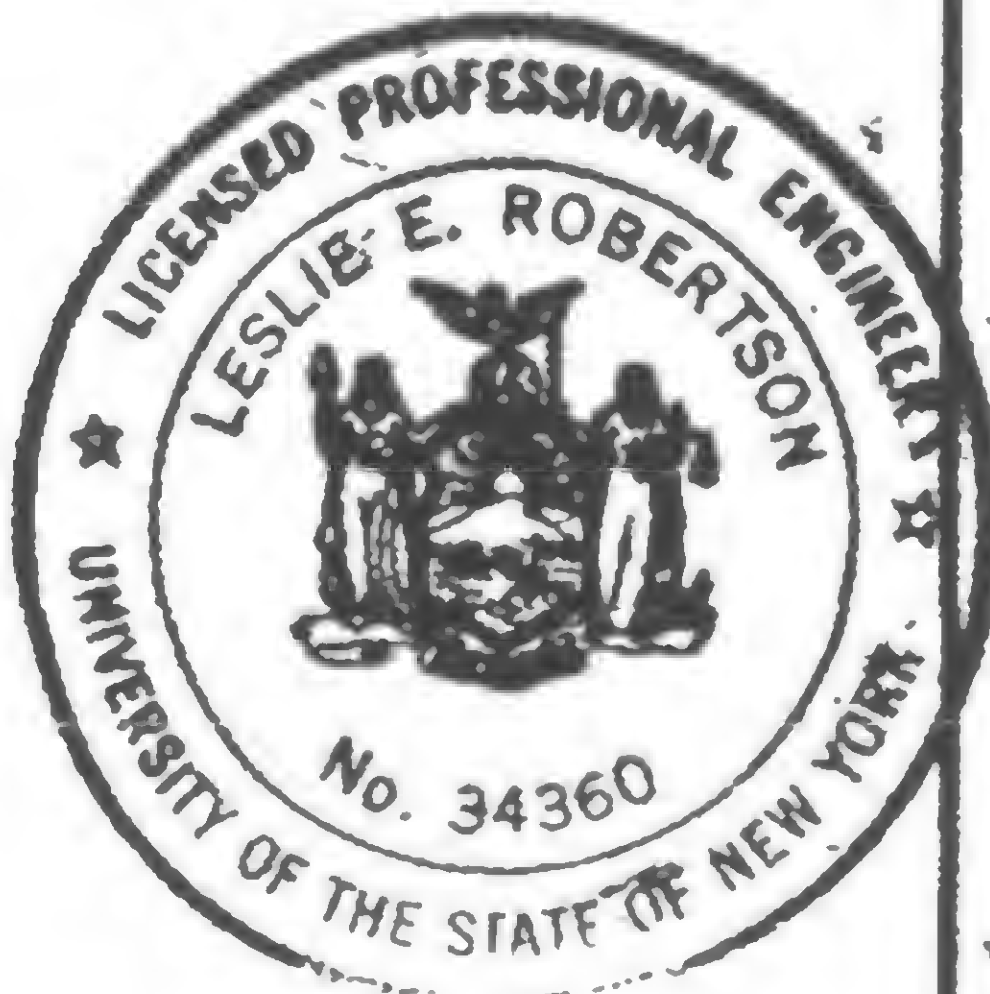
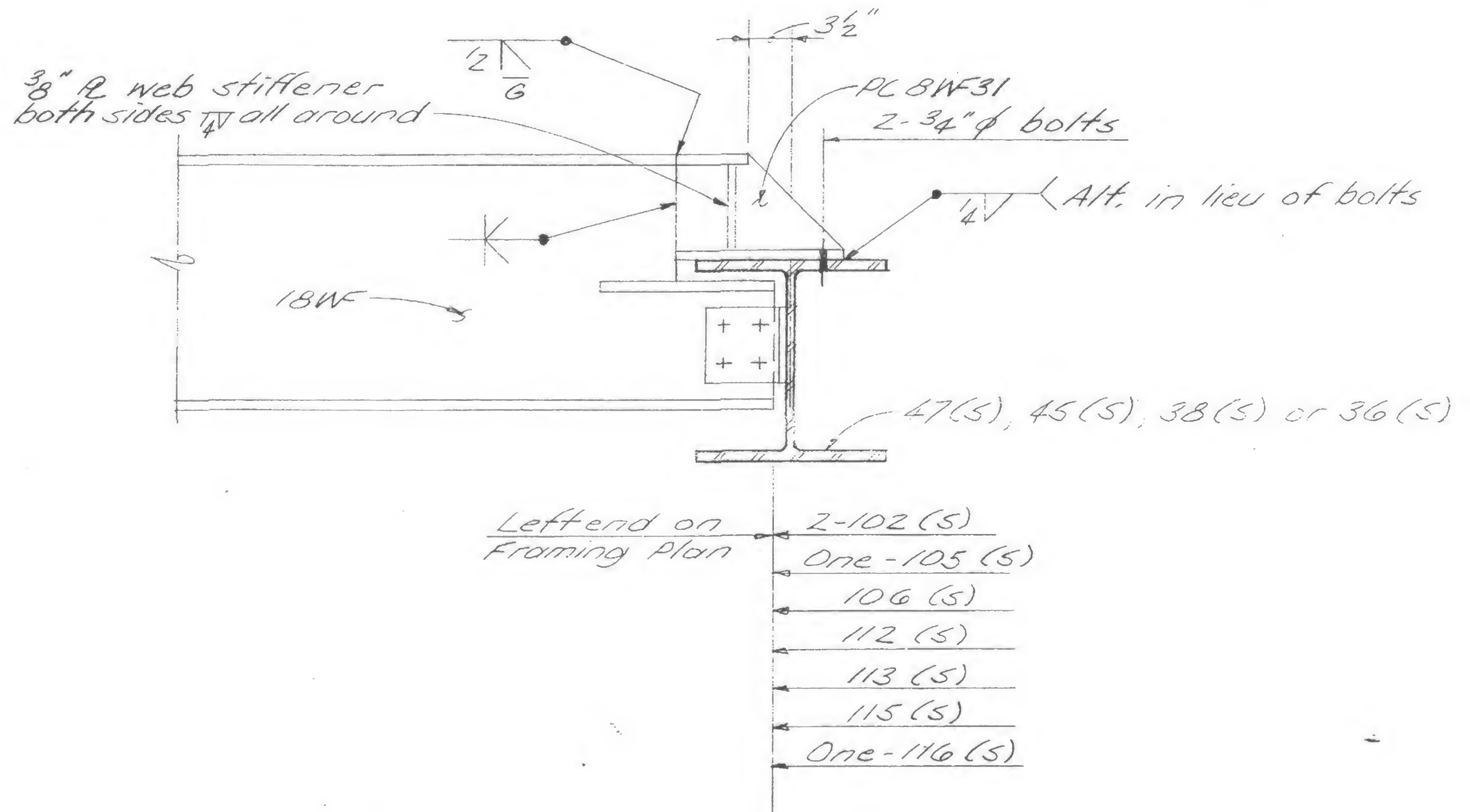


PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION DETAIL 910

DATE 8-15-68

## REVISIONS



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REVIEWED

19-A-910



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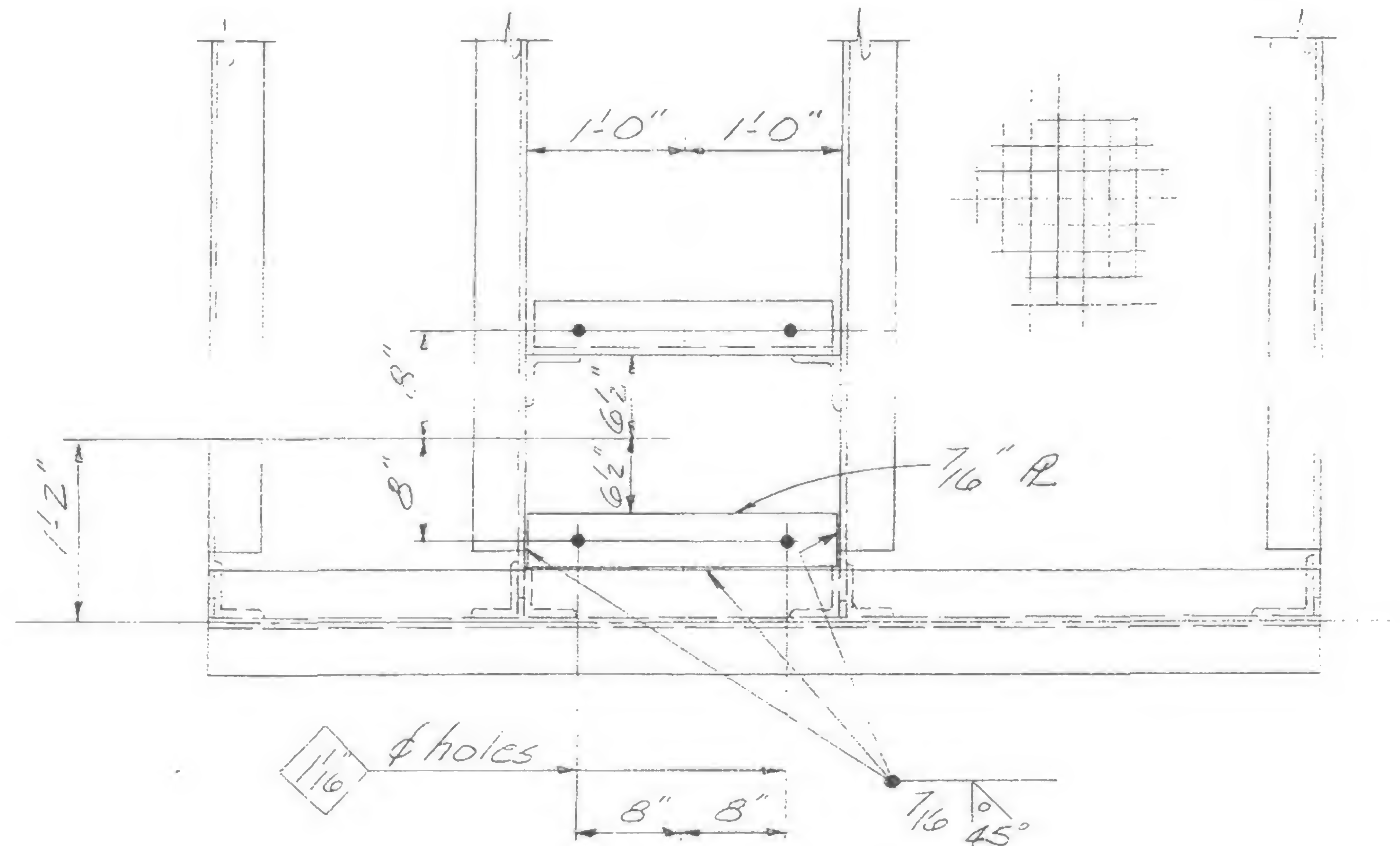
Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER*

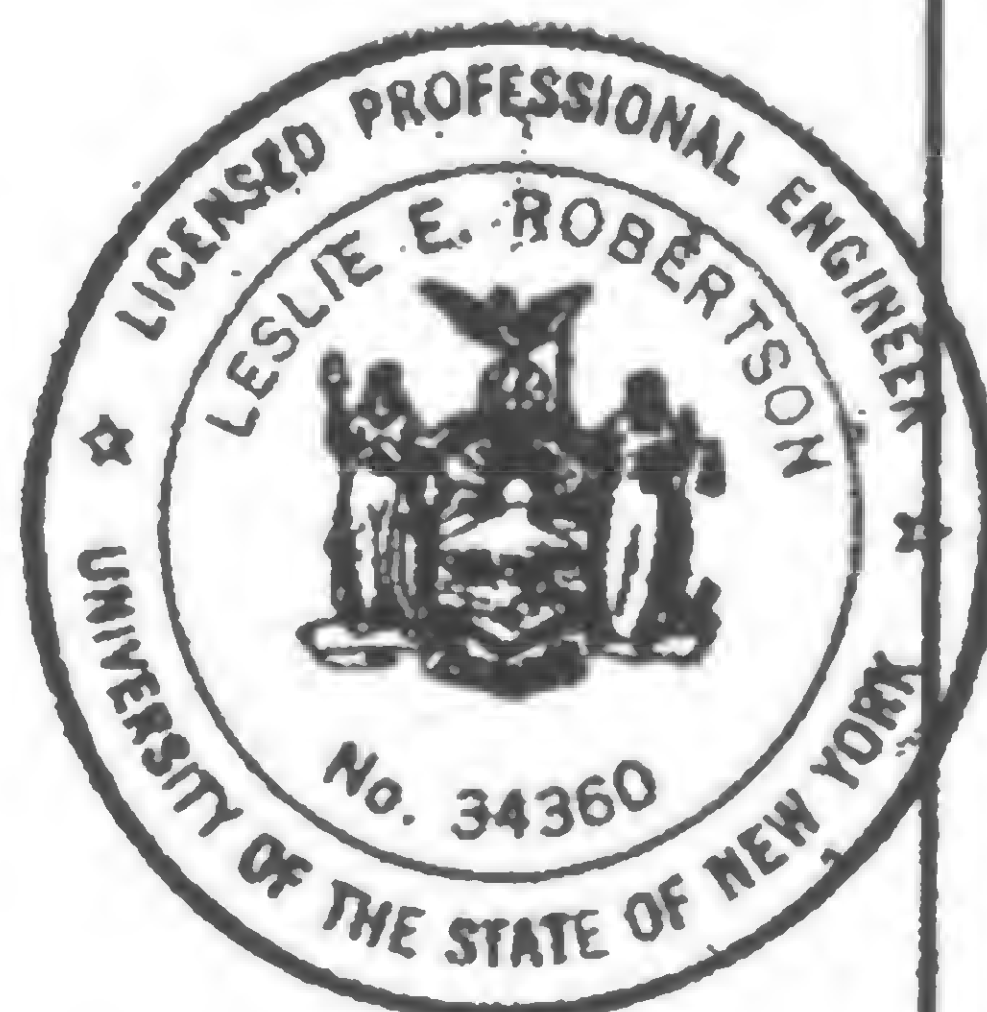
TITLE *REVISION AFTER FABRICATION DETAIL 911*

DATE *8-15-68*

REVISIONS



*ONE - PUMP PLATFORM 279(S)  
Revise both ends as shown*



DESIGNED

DRAWN

REVIEWED

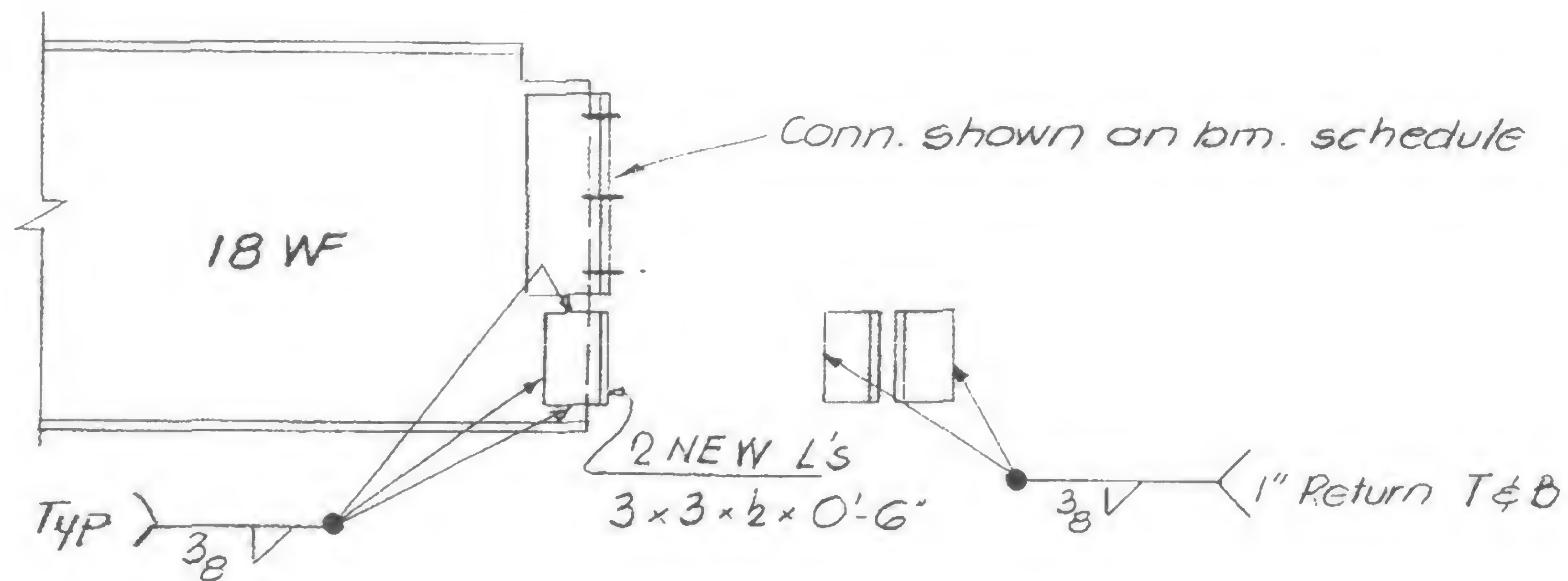
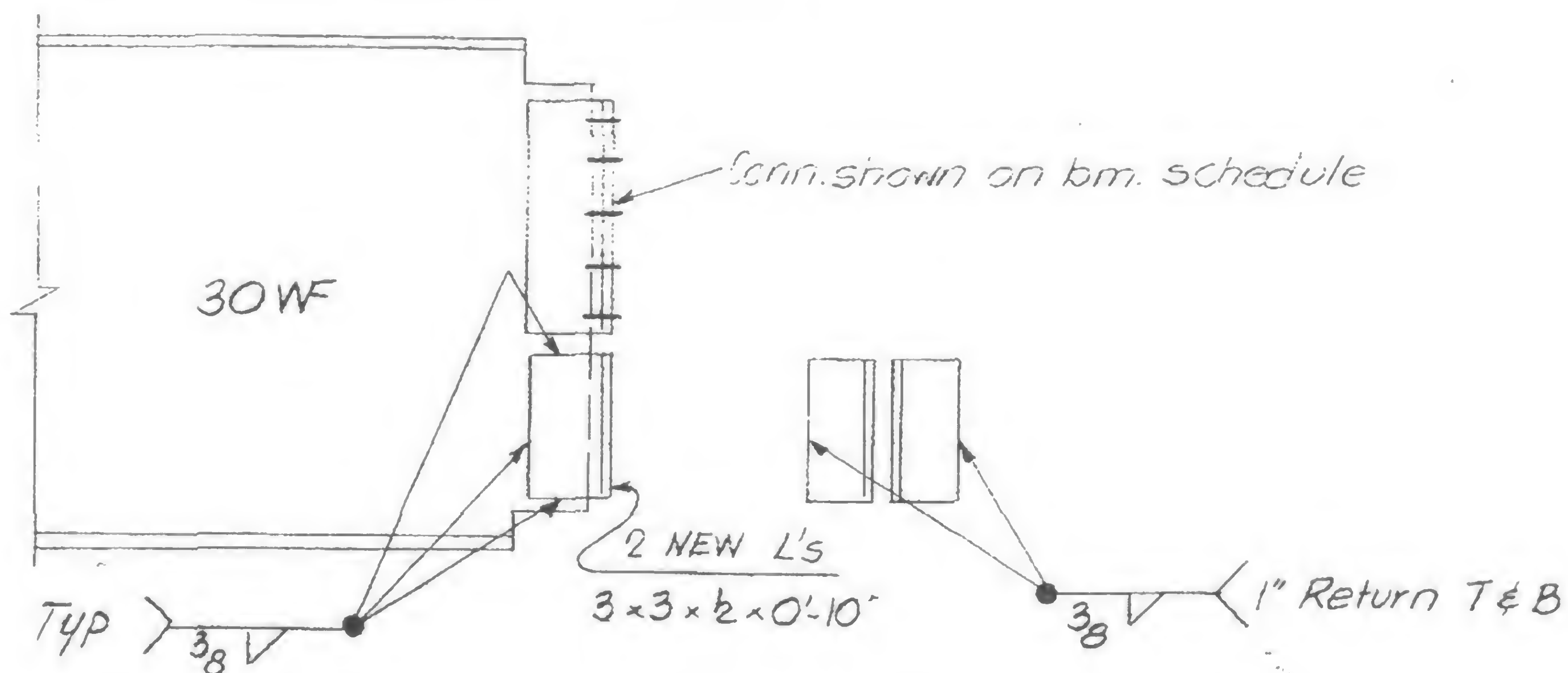
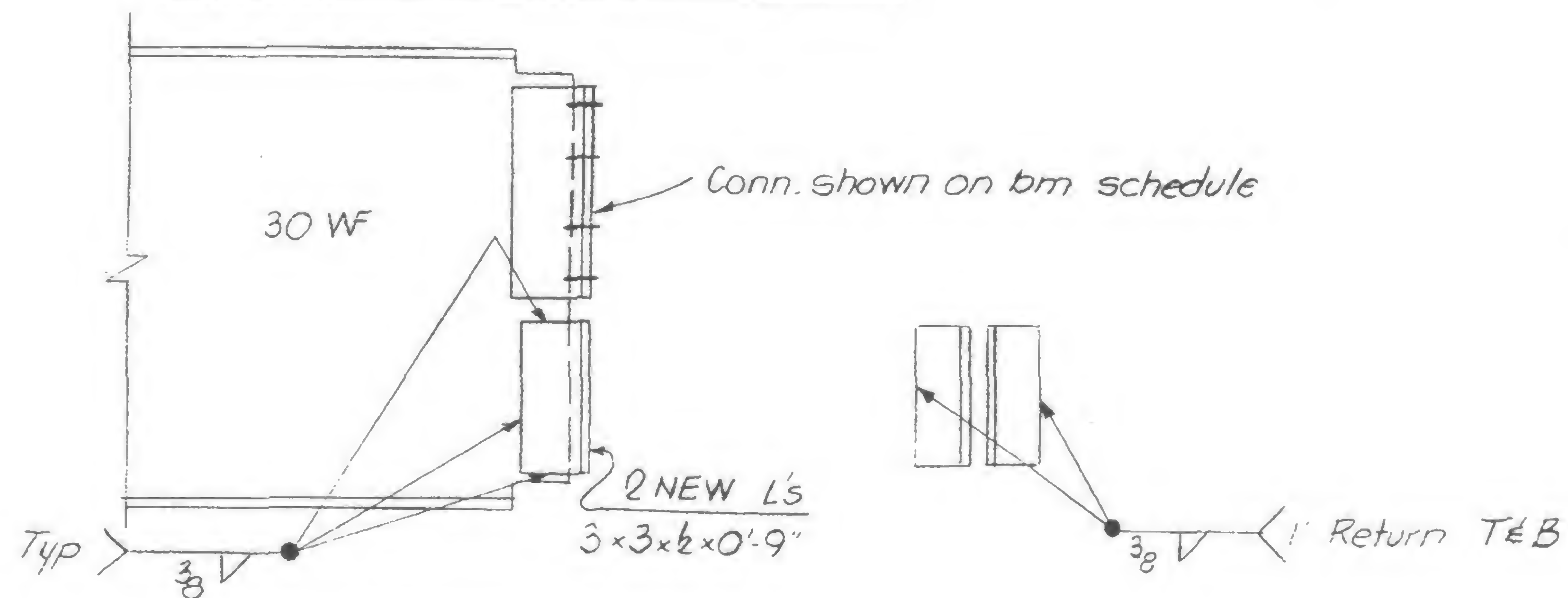
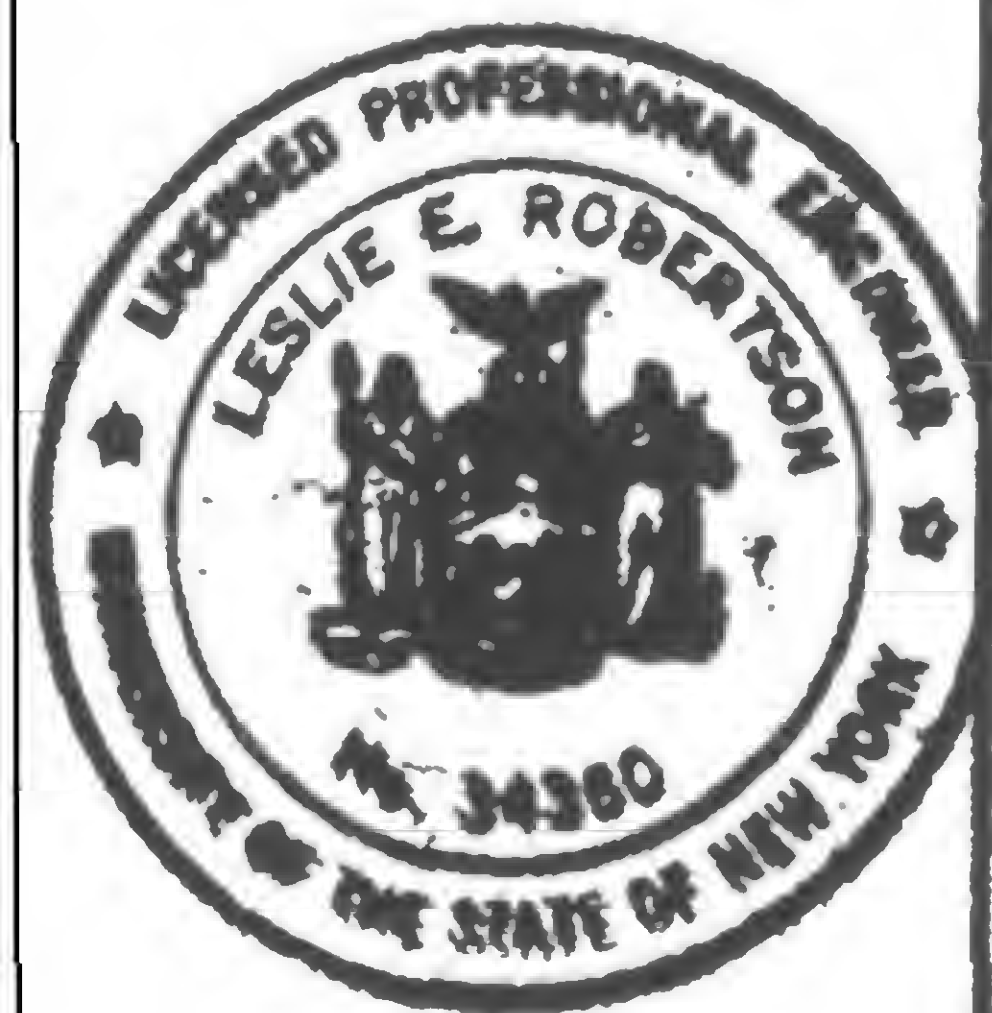
*19-A-911*

PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION - DETAIL 912

DATE 10-7-68

## REVISIONS

BM. 3988 @ 264'-0" levelBM. 3915 & 3977 @ 264'-0" levelBM. 597 & 3916 @ 284'-0" level

SIGNED

DRAWN

REVIEWED

19-AB-912



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT

THE WORLD TRADE CENTER

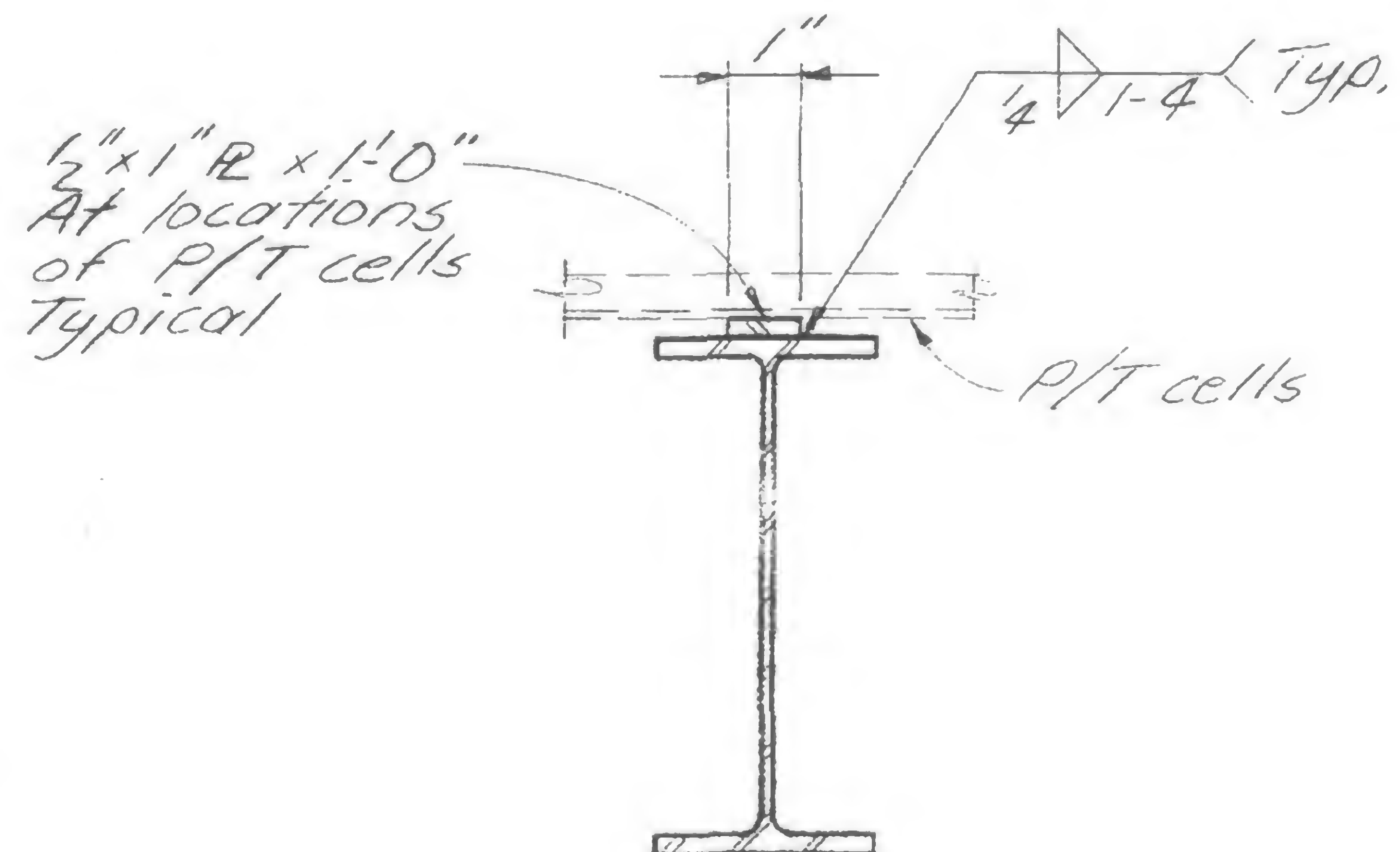
TITLE

REVISION AFTER FABRICATION-DETAIL 913

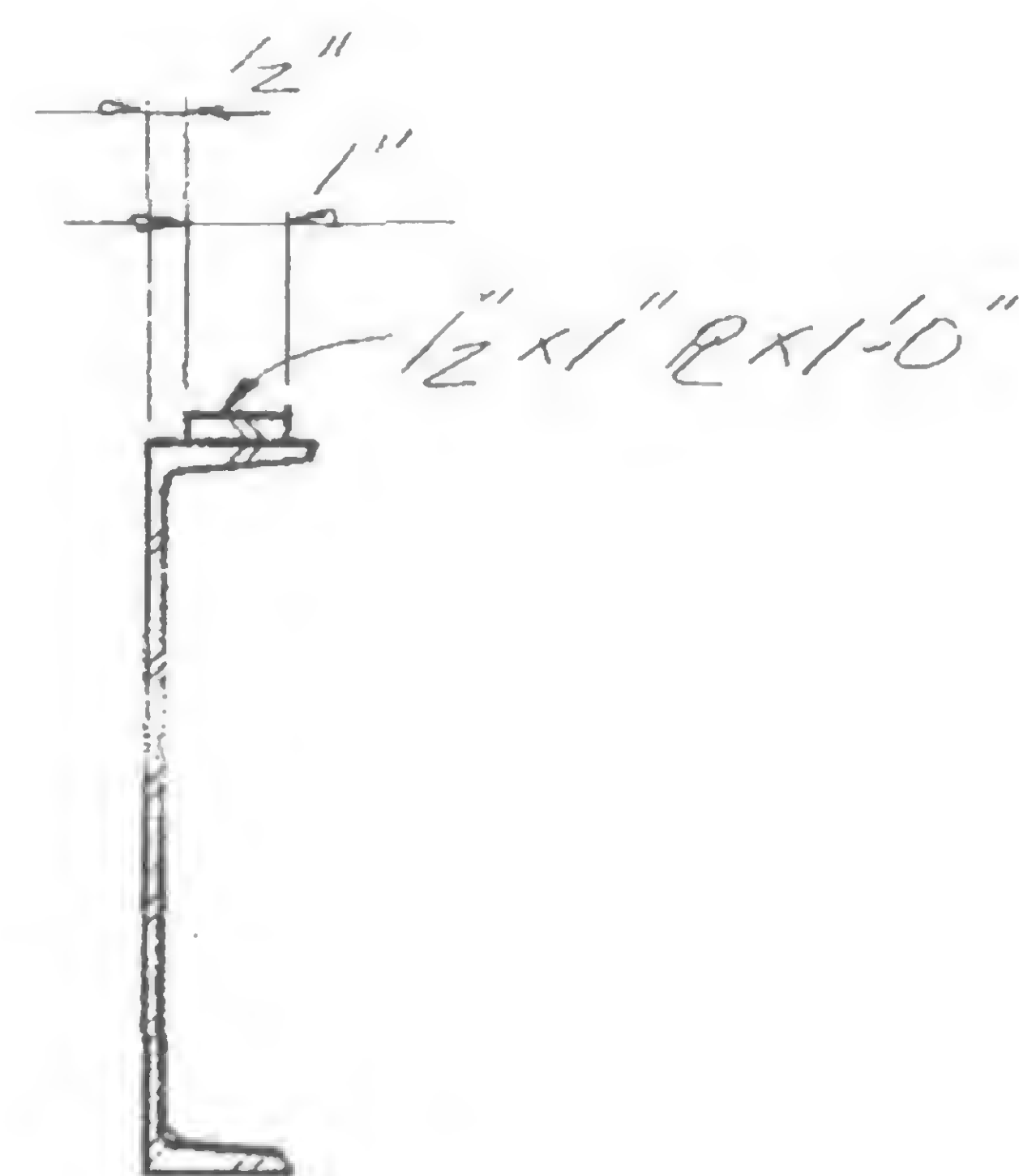
DATE

10/9/68

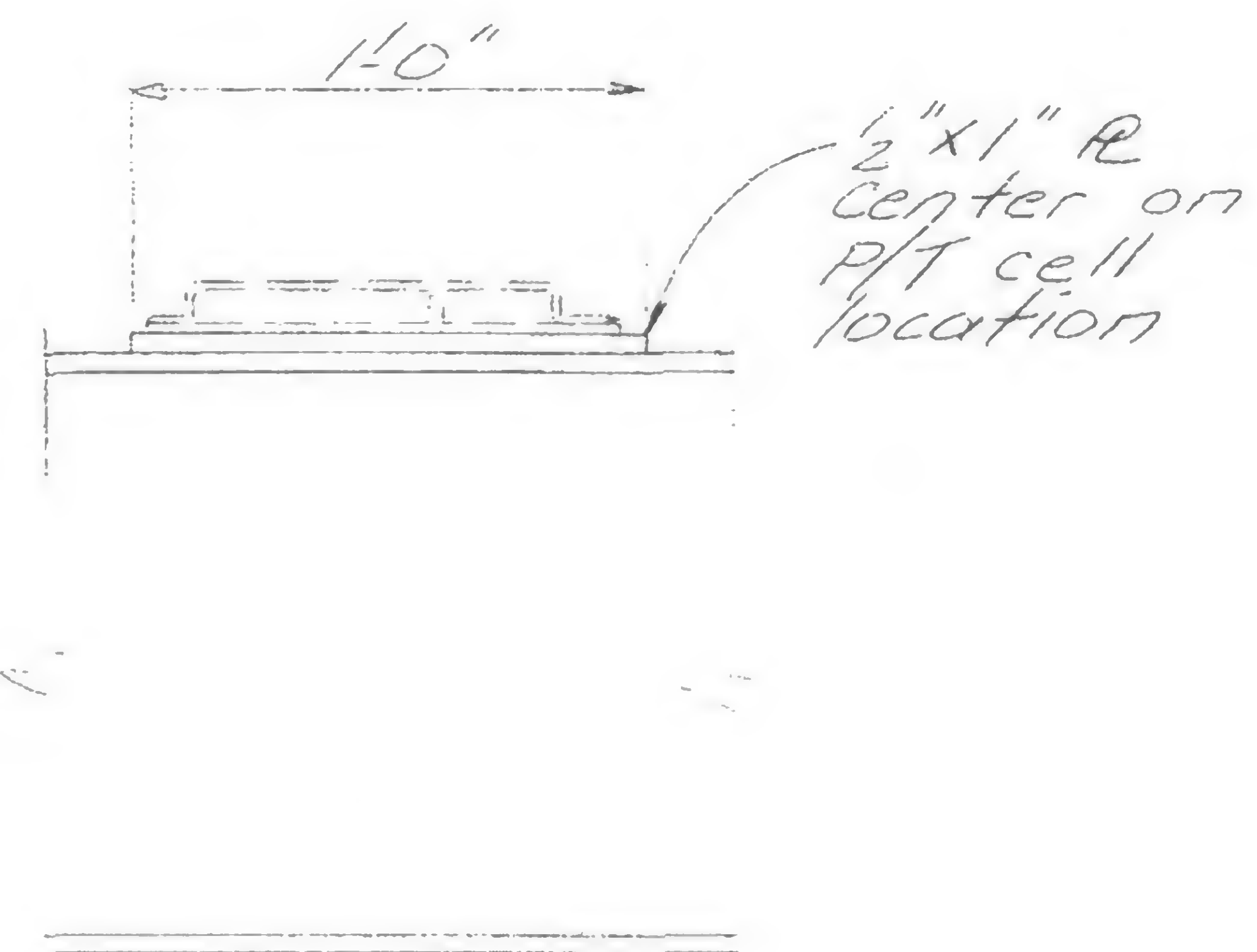
REVISIONS



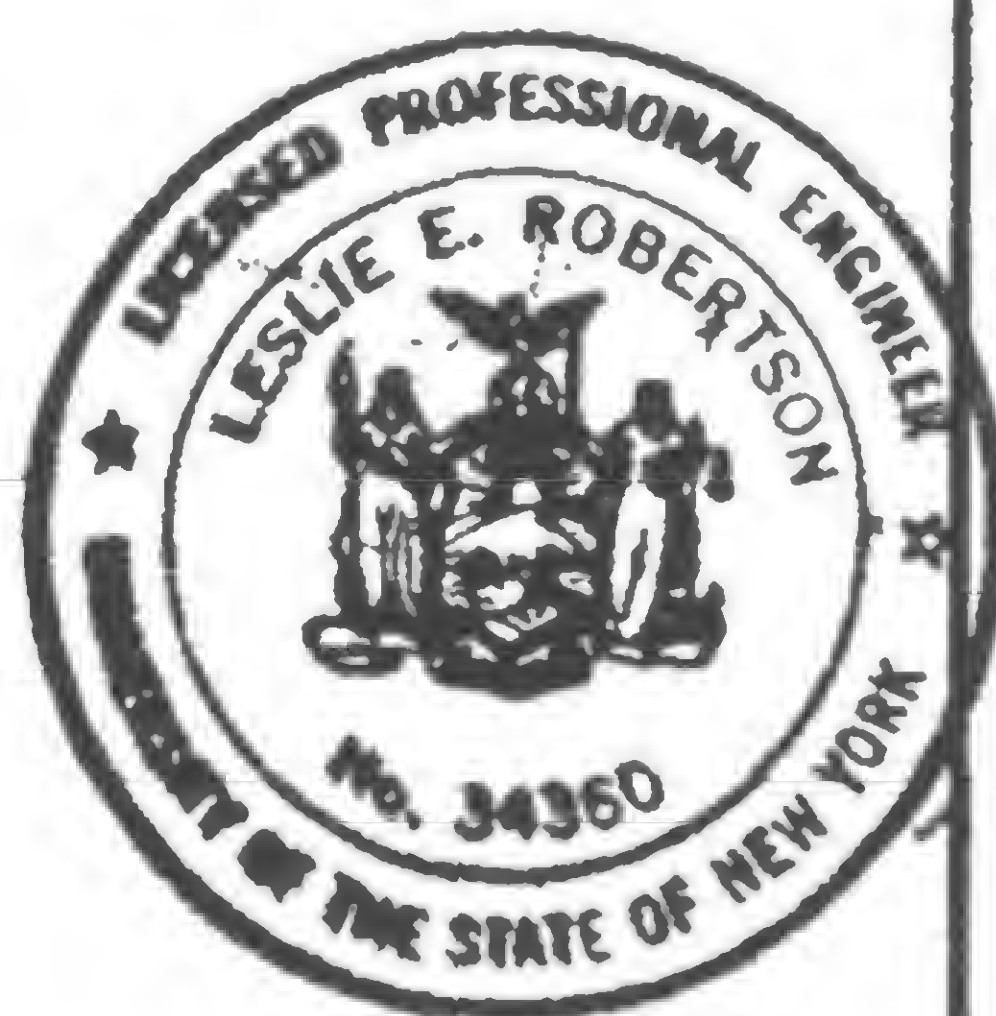
AT WF BEAMS



AT L BEAMS



TYPICAL ELEVATION



DESIGNED

DRAWN

REVIEWED

9-B-913

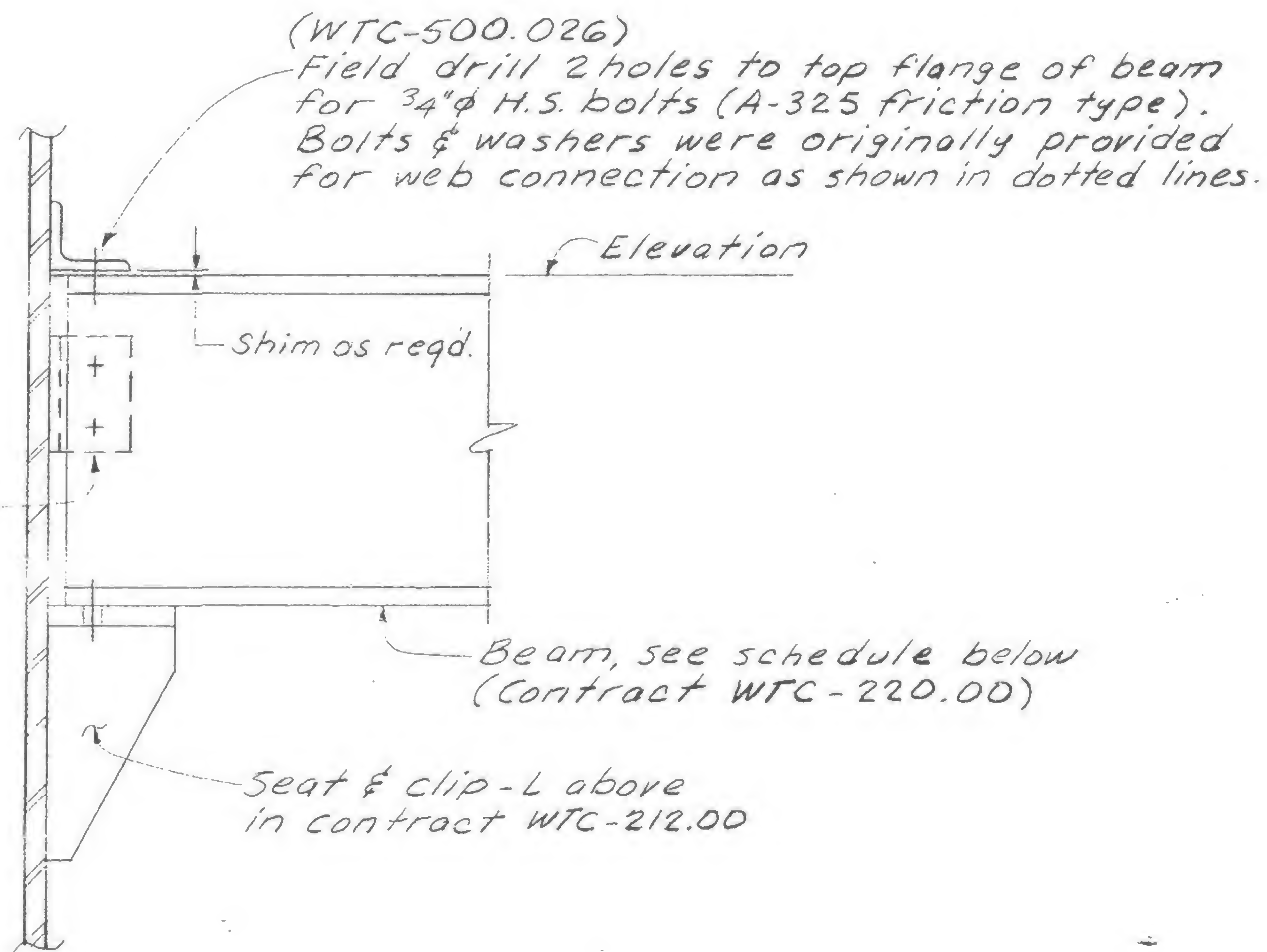
PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION DETAIL 914

DATE 11-20-68

## REVISIONS

Original location  
of clip-L now  
replaced by one  
on top.



DETAIL NO.	BEAM	
	SIZE	ELEVATION
A-401	18WF55	307'-5"
A-402	24B55	307'-11"
A-403	18WF55	307'-11"
A-404	18WF55	307'-11"
A-405	18WF55	308'-1"
A-406	18WF55	308'-1"
A-407	18WF55	308'-3"

DESIGNED

DRAWN

REVIEWED

19-A-914



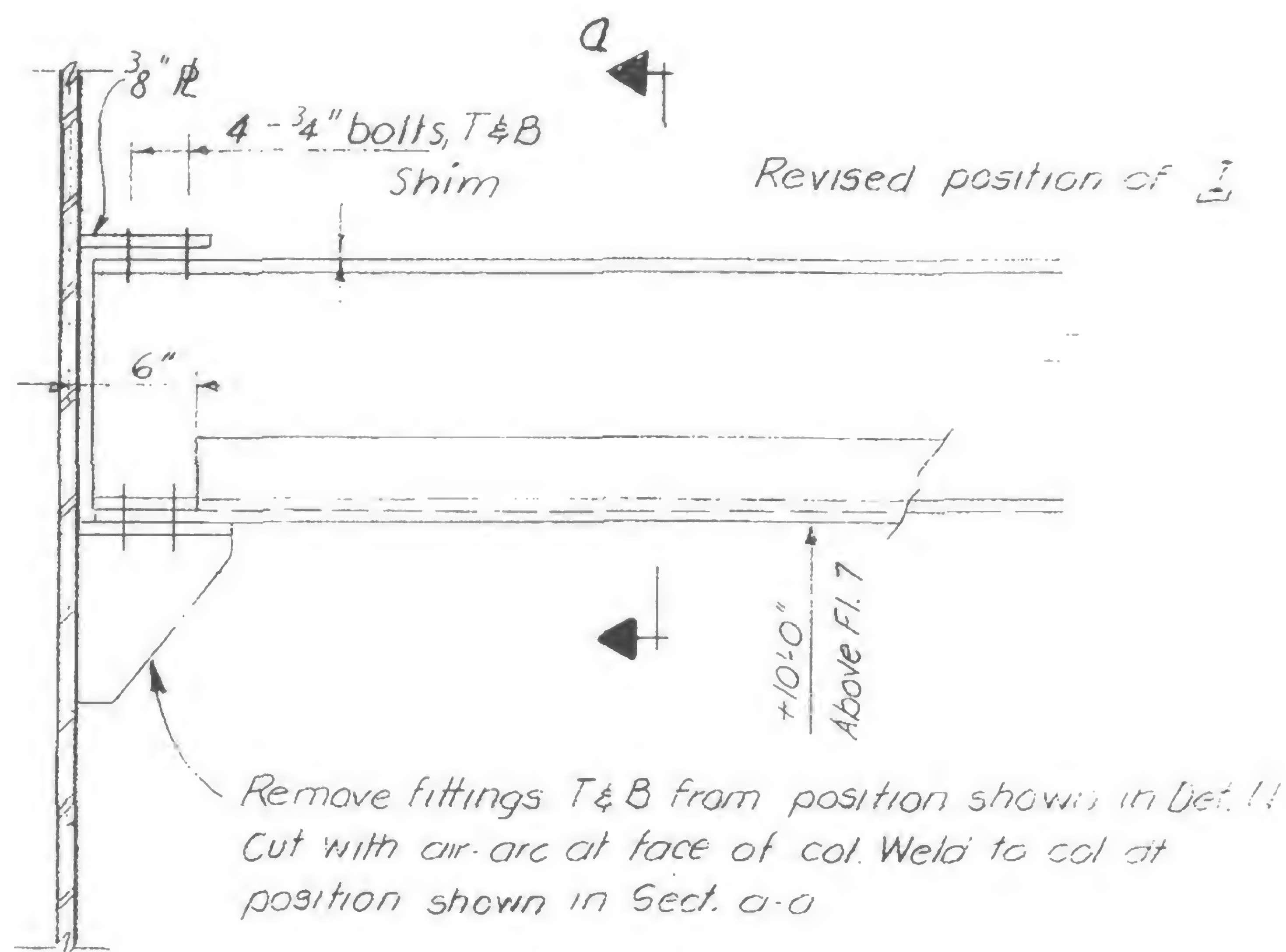


PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION - DETAIL 915

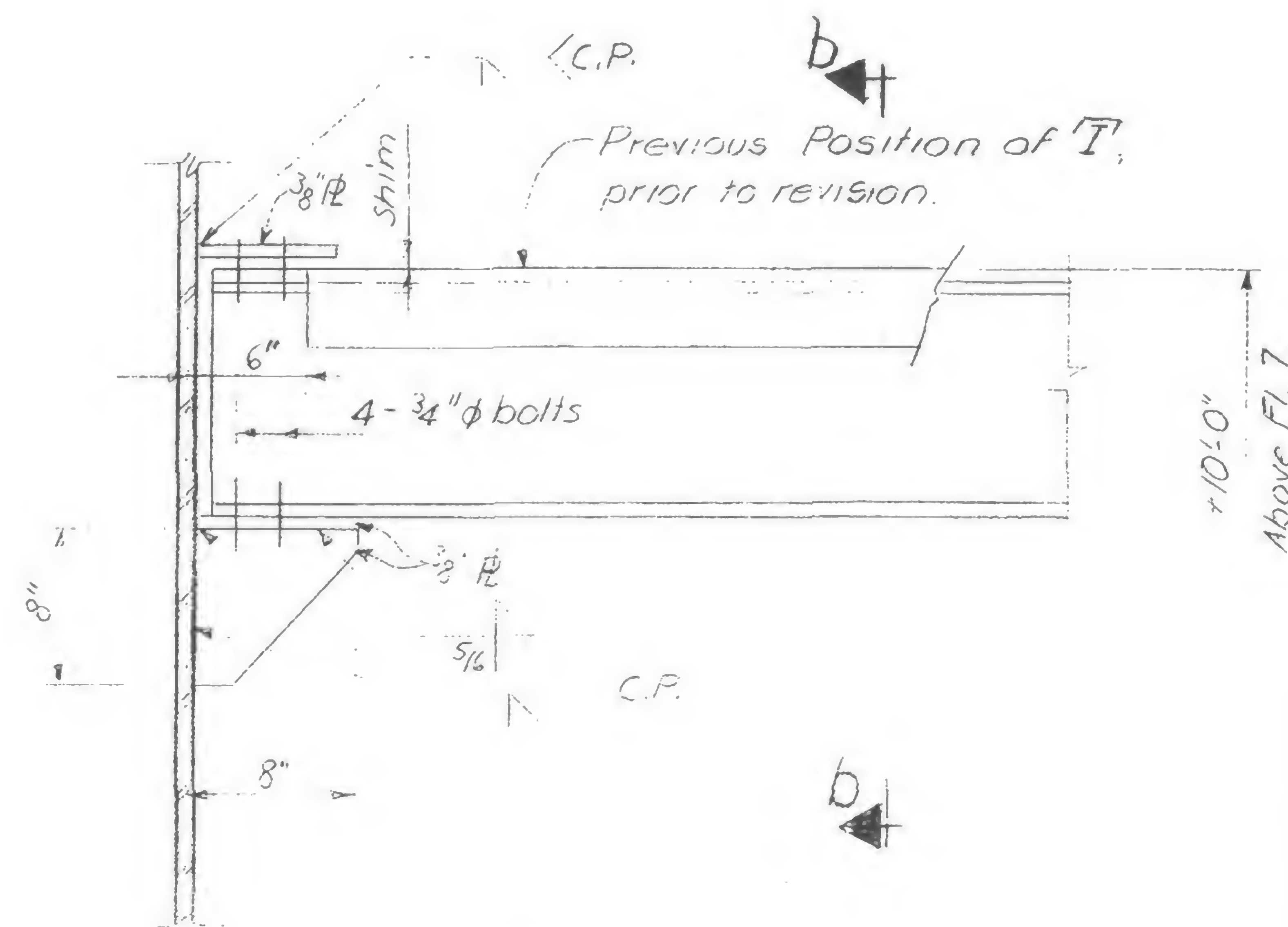
DATE 11-29-68

## REVISIONS



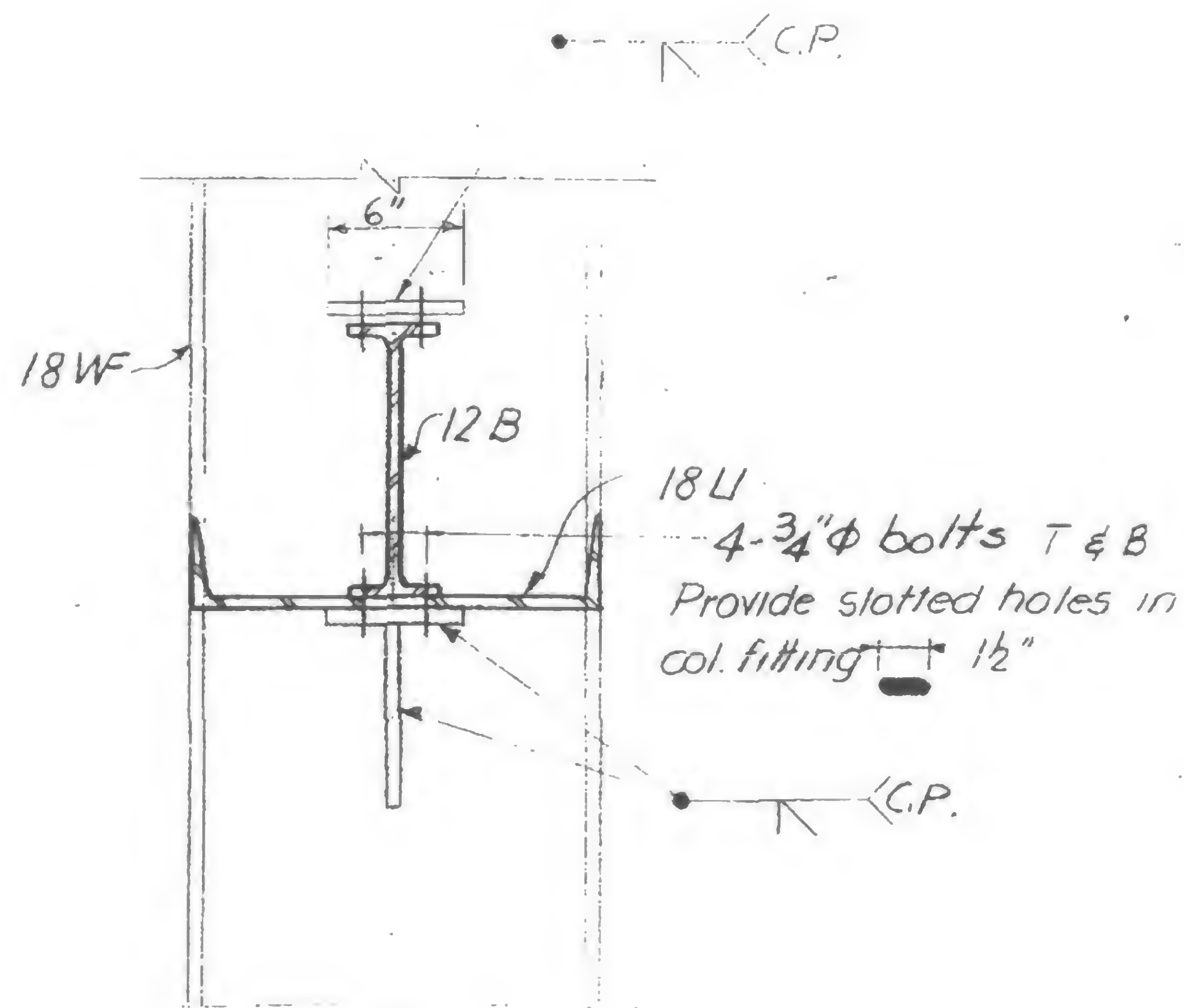
Detail M

Connection after Revision

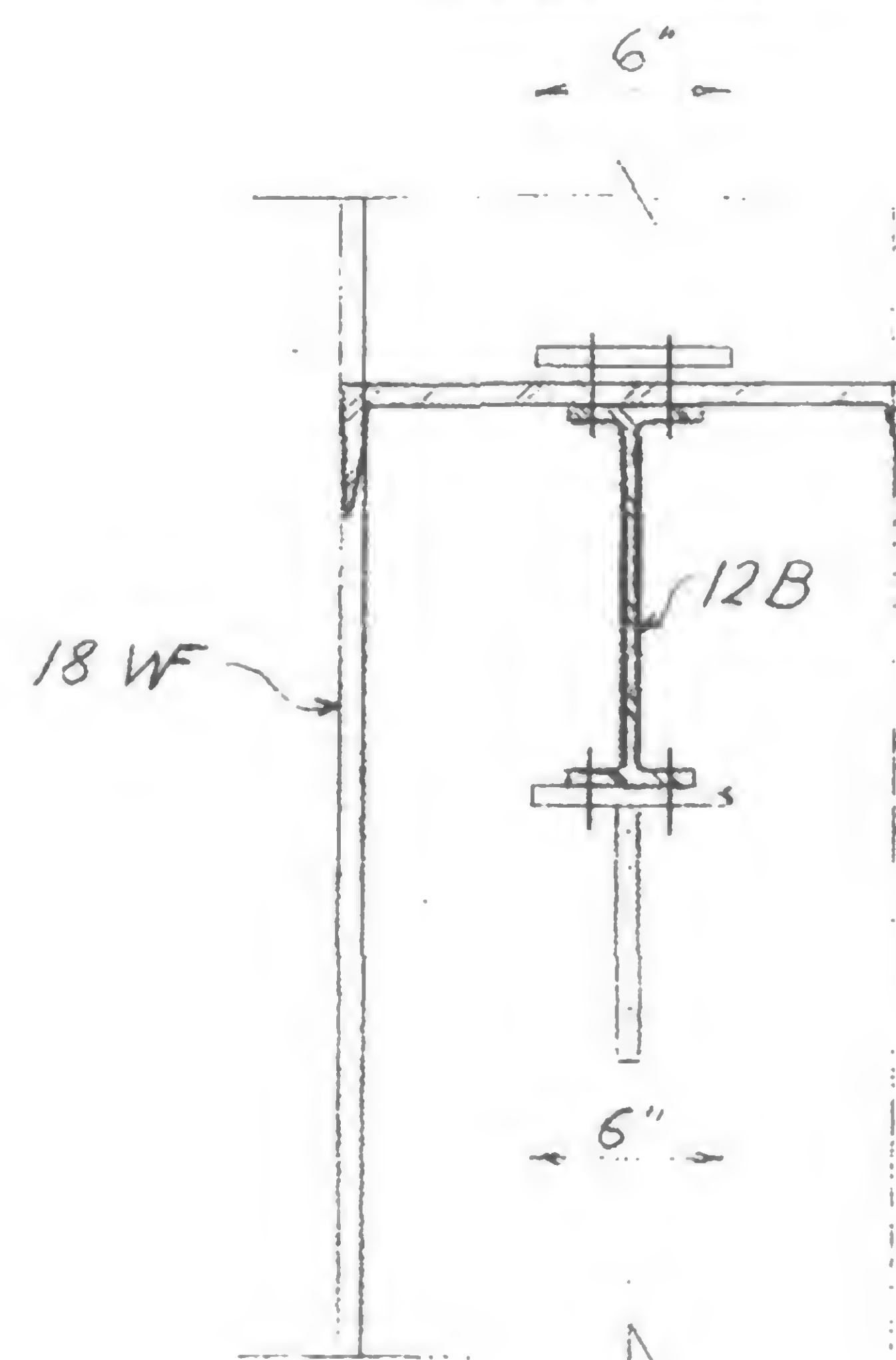


Detail N

Connection as Fabricated on column Before Revision



Section a-a



Section b-b

Ref. dwg: 16-AB4-23

19-AB-915







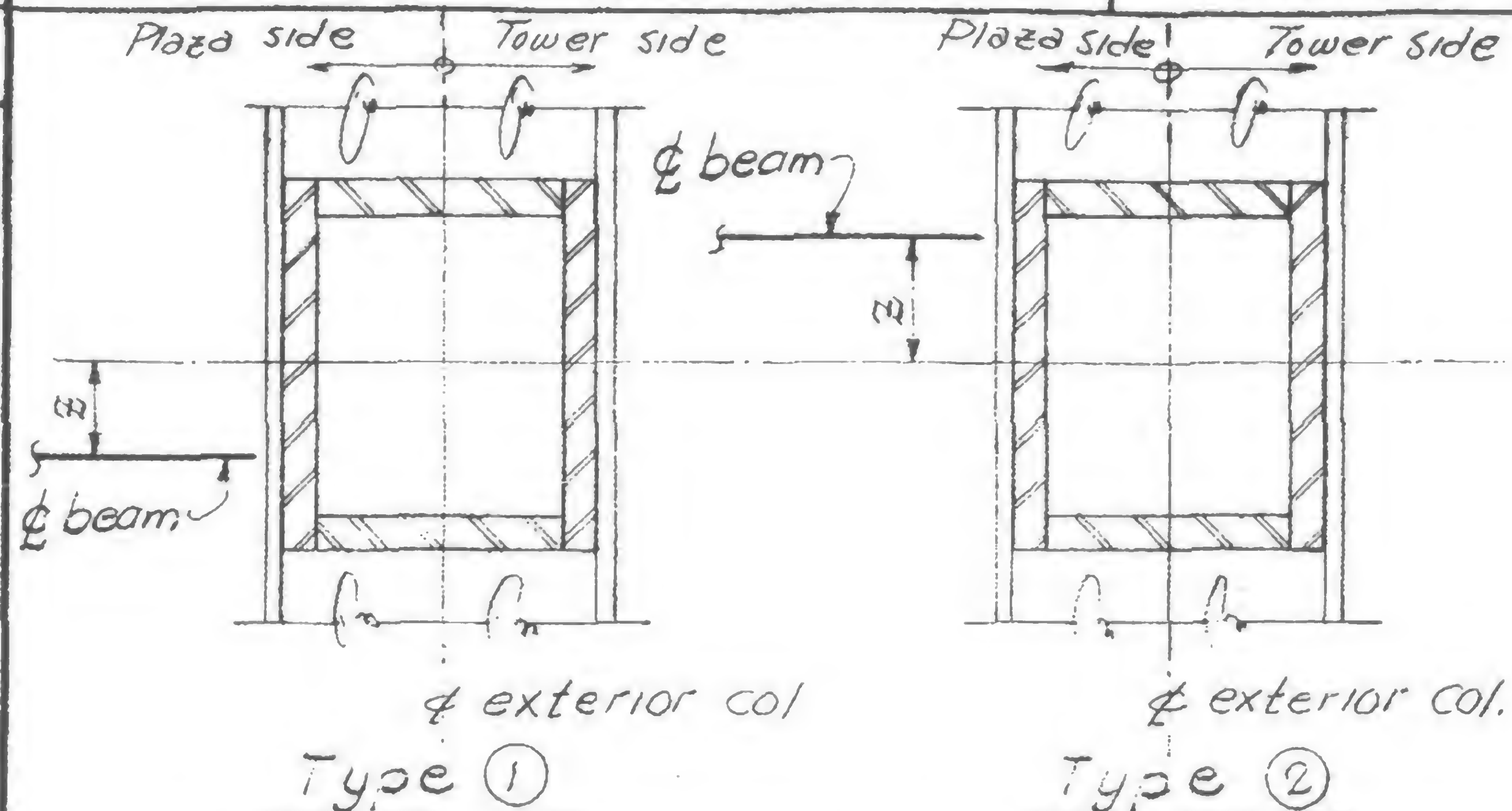
PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION - DETAIL 916

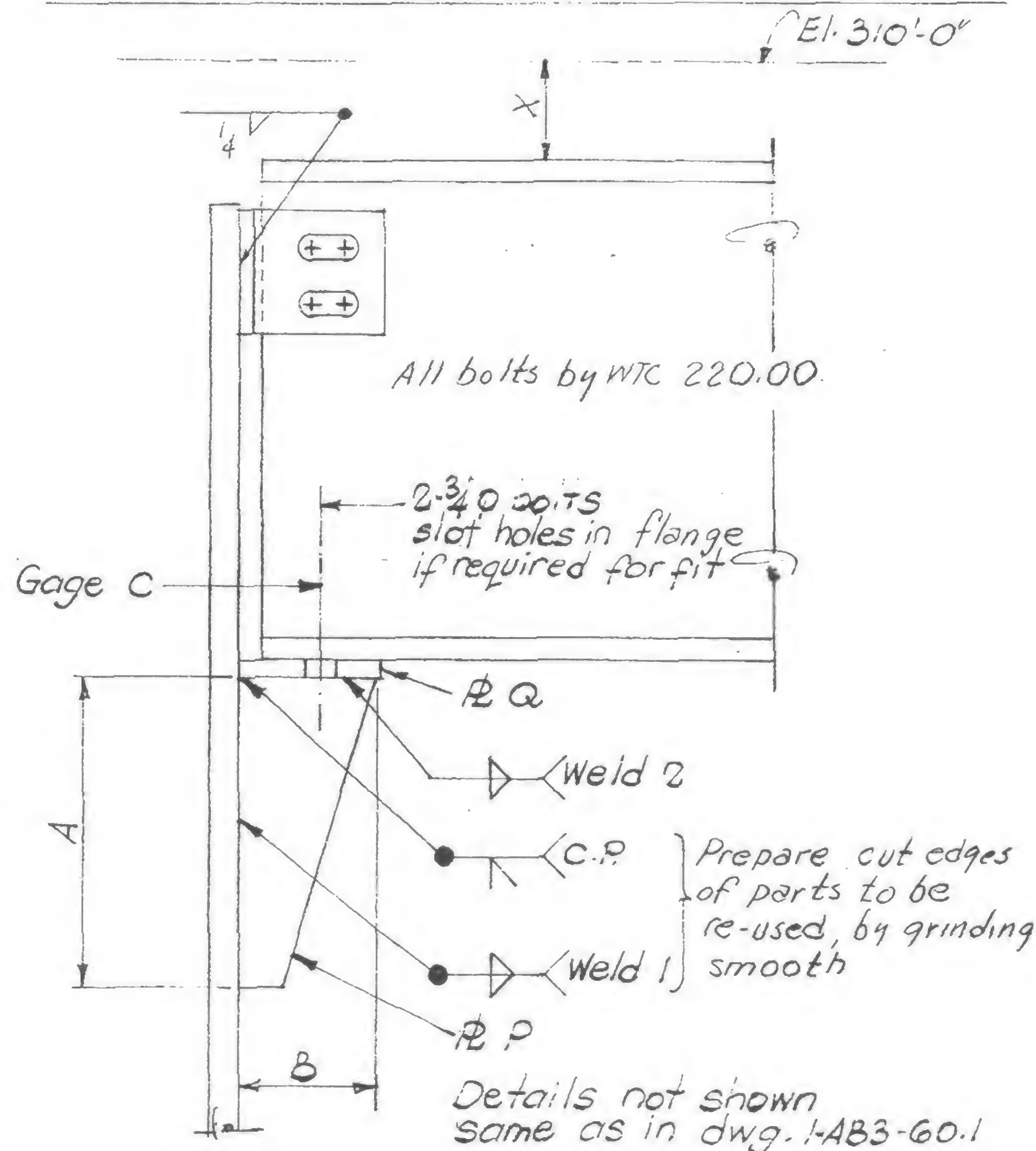
DATE 12-30-68

## REVISIONS

1-3-69



PLAN: PLAZA BEAM SEAT LOCATIONS



TYPICAL PLAZA BEAM SEAT DETAILS

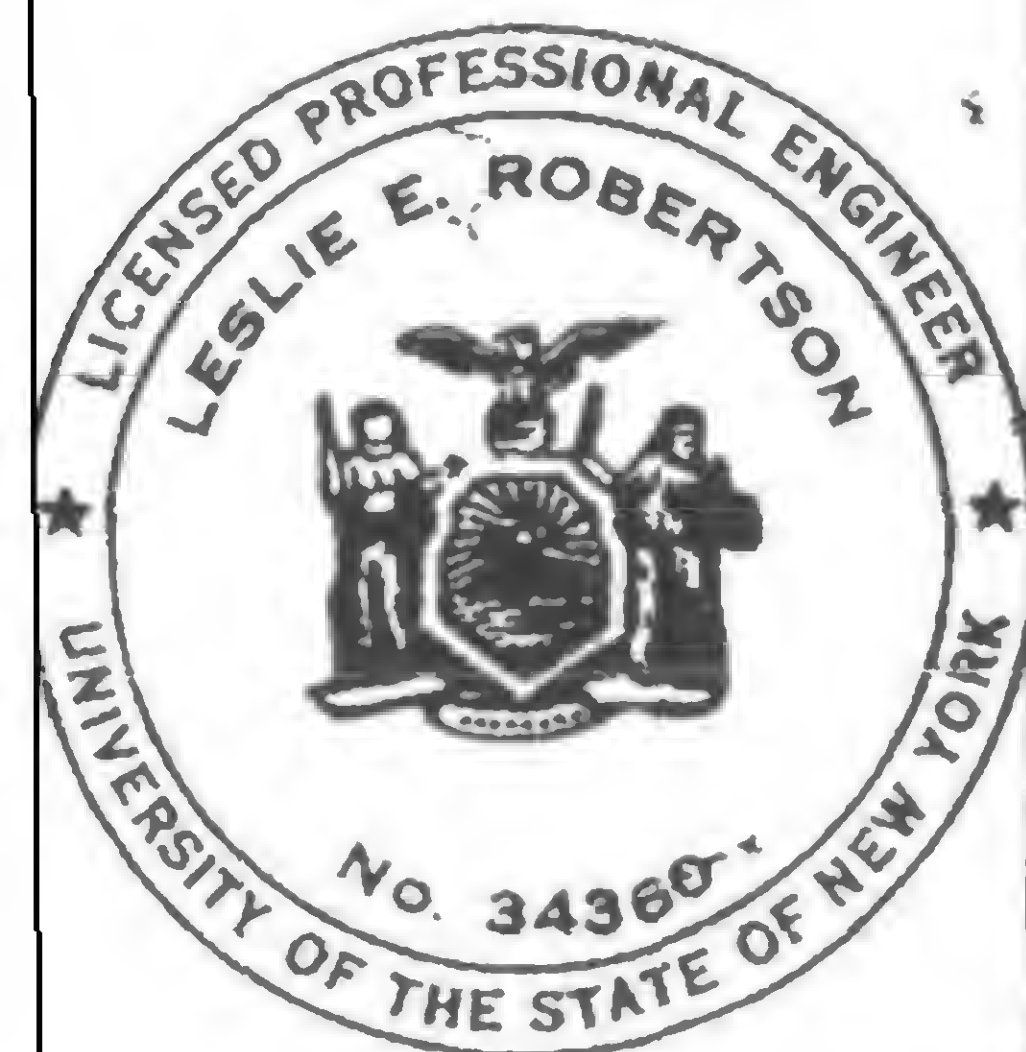
## COLUMN LOCATION

	224B	301B	312B	315B	351B	354B
Action Required	Note 1	Note 2	Note 2	Note 2	Note 1	Note 3
Previous Detail	P.I.N	P10B	P.I.N	P.I.N	None	None
New Seat Location						
Type	①	②	①	②	on $\phi$	on $\phi$
E	0'-6"	0'-6"	2'-6"	1'-3"	0"	0"
Seat Design Data	—	Note 4	Note 4	Note 4	Note 5	Note 4
Plates	P	3/4"			1/2"	
Q	3/4"				1/2"	
Dimensions	A	1'-2"			1'-0"	
B	6"				6"	
X	11"				11"	
C	5/2"				3/2"	
Welds	1	5/8"			5/16"	
2	3/8"				5/16"	
Beam Size	16WF58				16WF36	
Ref. Dwg: 1-AB3-60.1, -60.5						

## NOTES:

1. Provide new beam seat
2. Remove beam seat & web clip from loc. previously shown and install removed parts at new location shown.
3. Remove seat & clip previously scheduled for column 224B and install removed parts at col 354B
4. Seat details are the same as previously scheduled for this column. See reference dwg.
5. Seat detail is the same as previously scheduled under P.I.N.
6. Dress spandrel face after cutting off beam seats & web clips, by filling gouges with weld metal & grinding burrs smooth.
7. New beam seats & clips may be installed in lieu of re-using existing parts, Contractor's option.

19-B-916



DESIGNED

DRAWN  
S.T.M.

REVIEWED



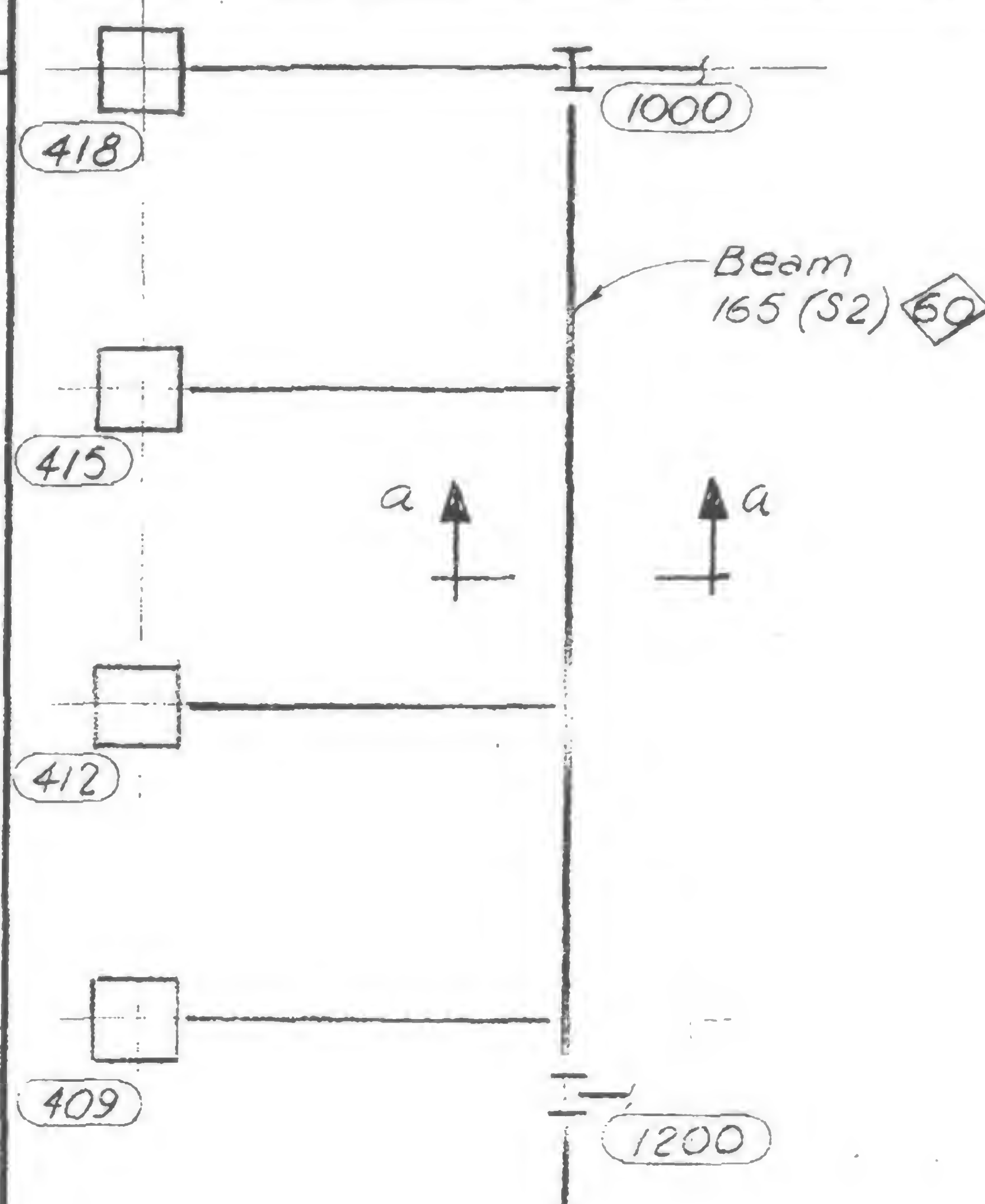


PROJECT THE WORLD TRADE CENTER

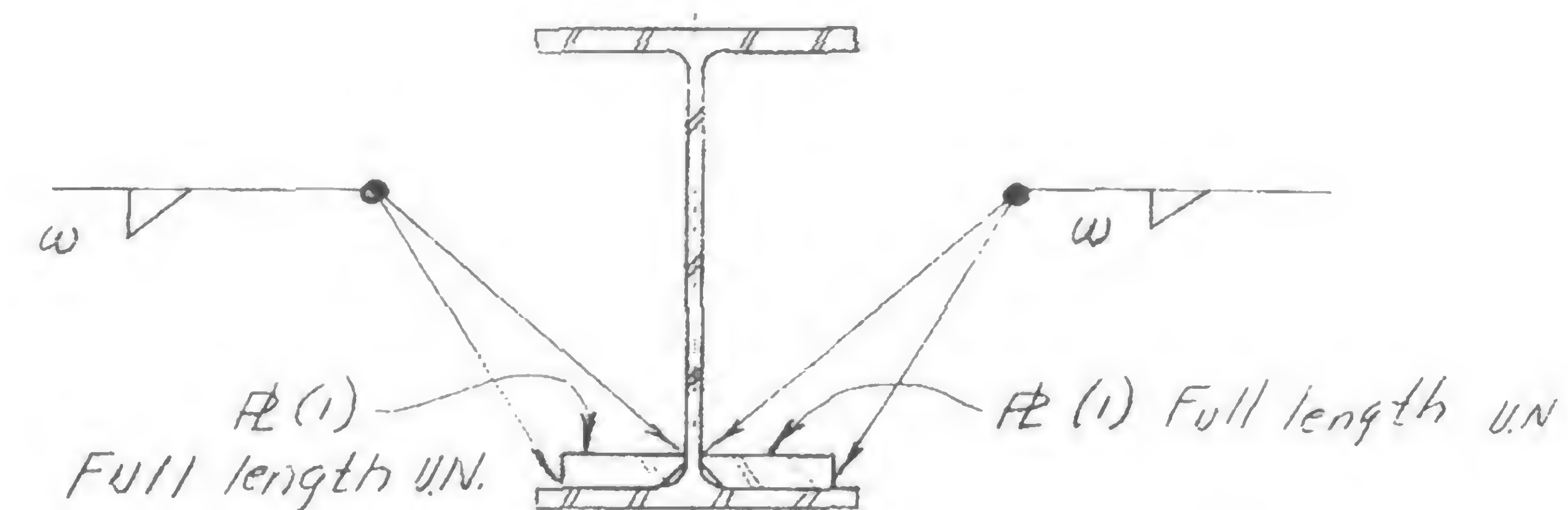
TITLE REVISION AFTER FABRICATION - DETAIL 918

DATE 1-15-69

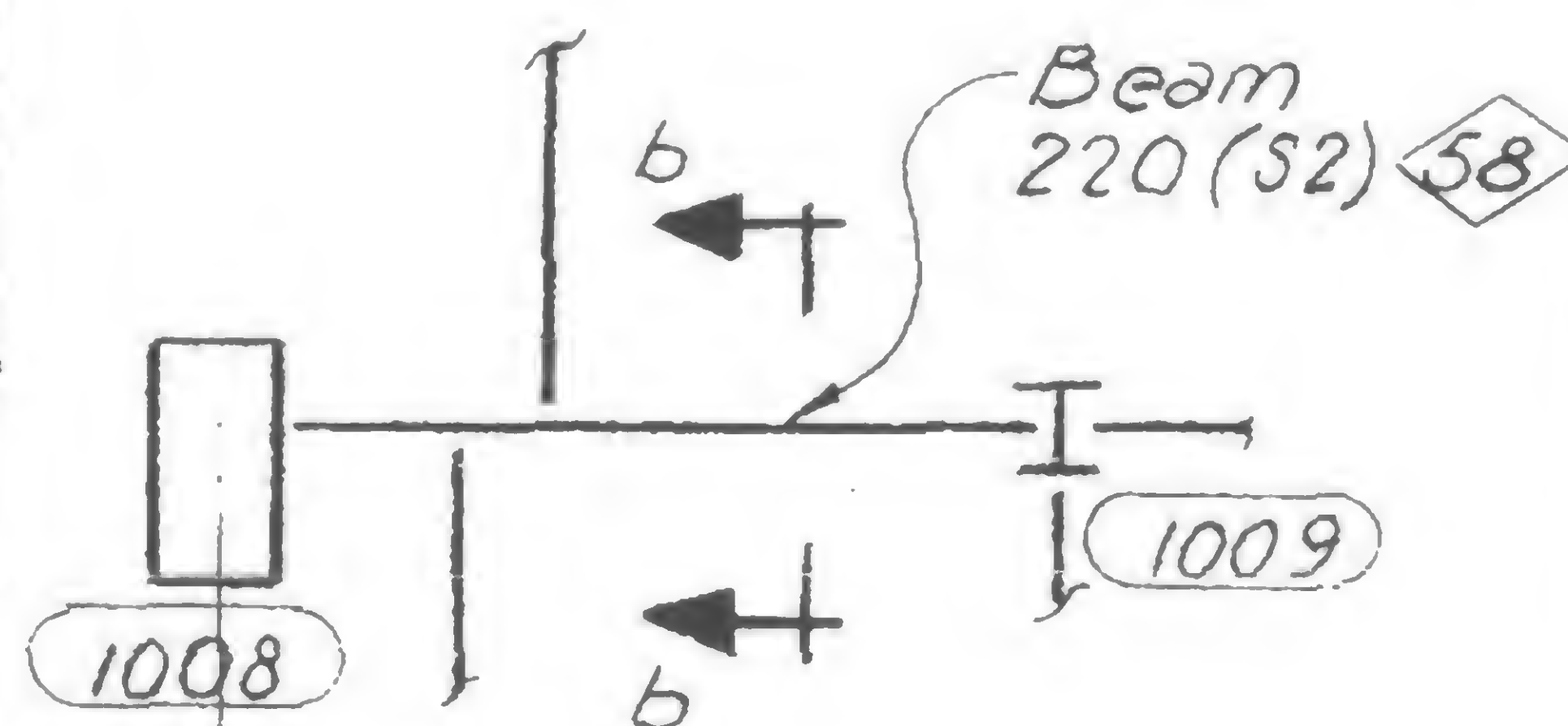
## REVISIONS



PLAN-ELEV. 274 - TOWER A



TYPICAL SECTION

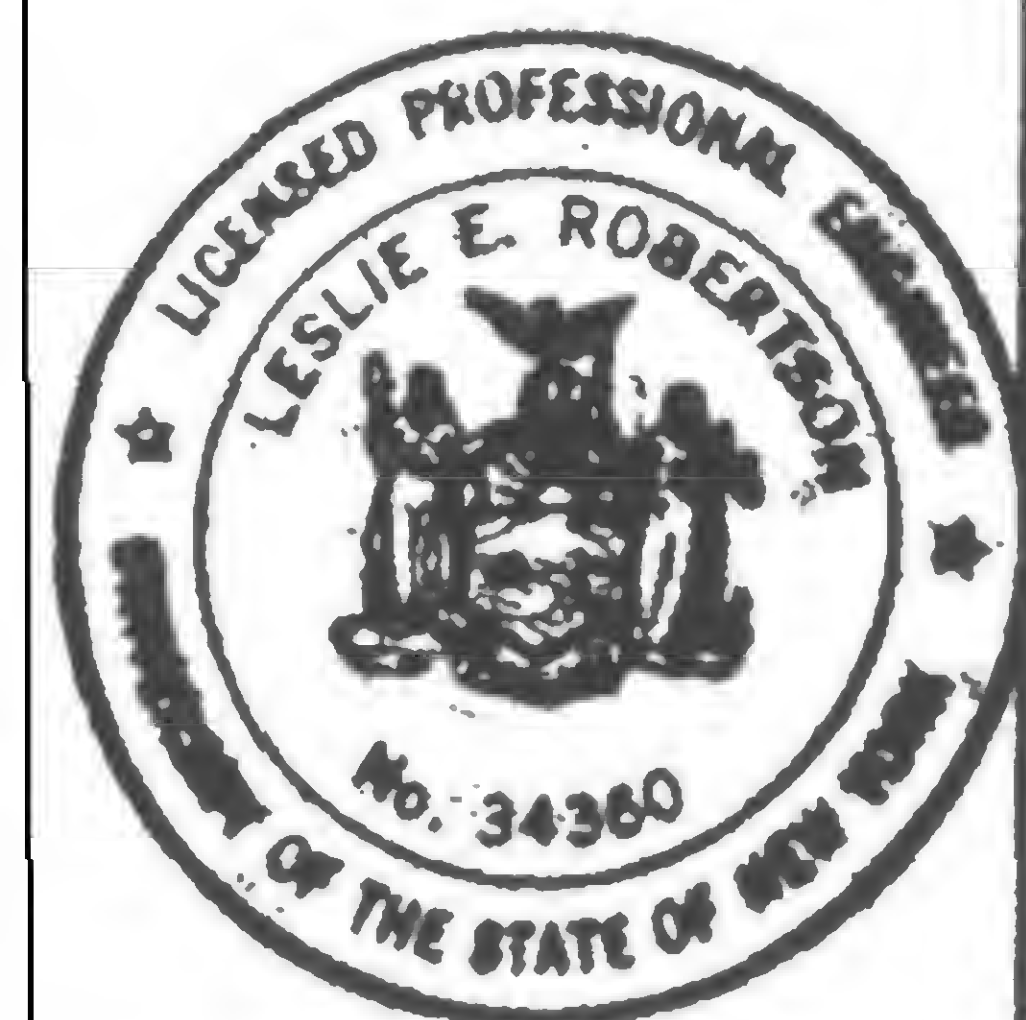


PLAN-ELEV. 274 - TOWER A

Added Beam Studs 3/4" $\phi$ x 3" U.N.		
Beam	No Studs per Row	Spac'g of Rows
124(S2) 62	2	6" o.c.
149(S2) 70	2	6" o.c.
221(S2) 58	2	6" o.c.
222(S2) 70	2	6" o.c.
223(S2) 70	2	6" o.c.
224(S2) 70	2	6" o.c.
225(S2) 70	2	6" o.c.
226(S2) 70	2	6" o.c.

Studs shall be installed for the full length of beam, unless otherwise noted.

Detail	Beam Section	$\Phi$ (I)	Weld Size "w"	Notes
Sec aa	12WF79	5" x 3/4" ( $F_y=50$ )	1/4"	Stagger welds 4" welds @ 8" o.c.
Sec bb	12WF27	2 3/4" x 1/2" ( $F_y=36$ )	1/4"	Stagger welds 4" welds @ 8" o.c.







SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

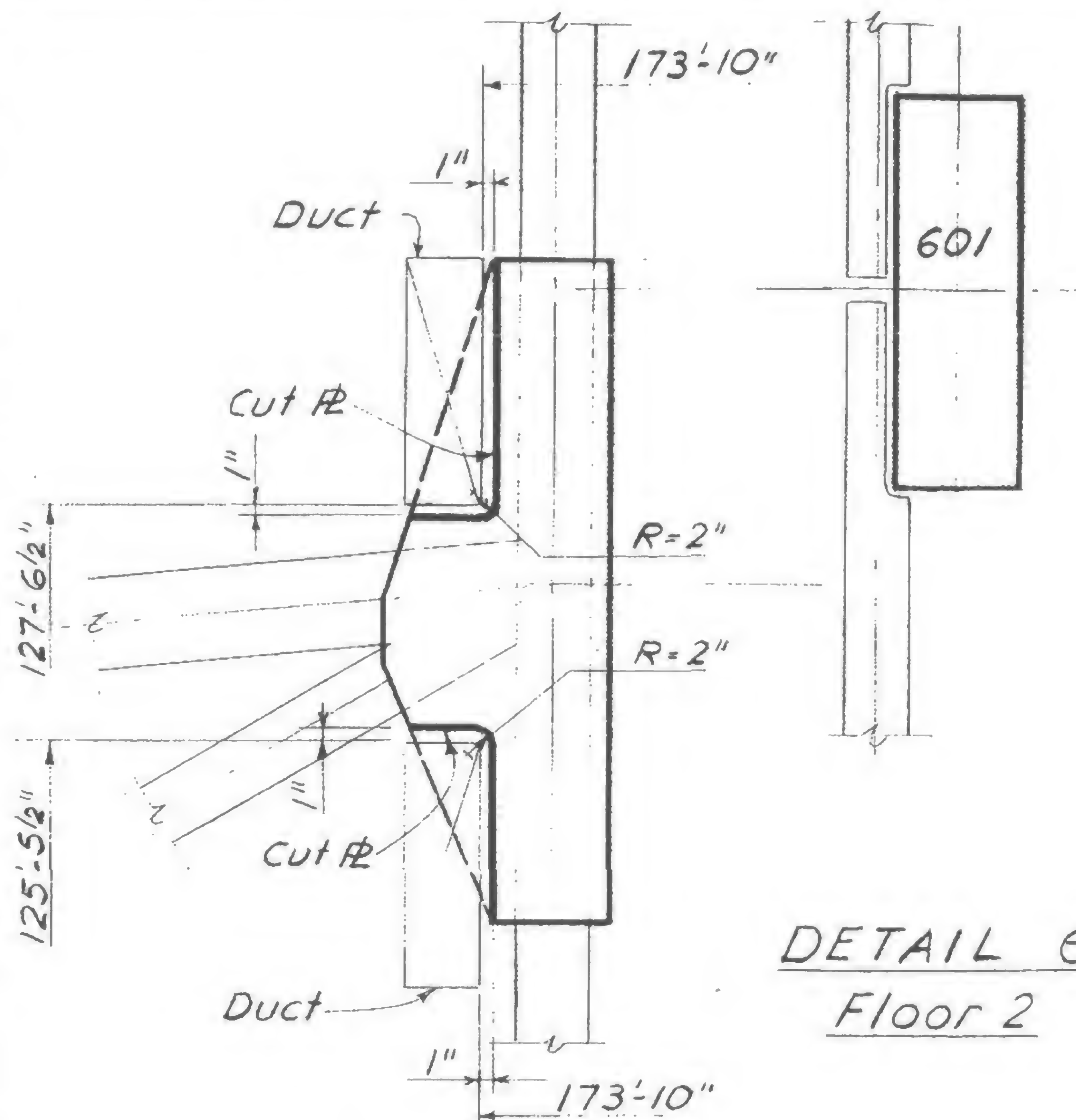
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

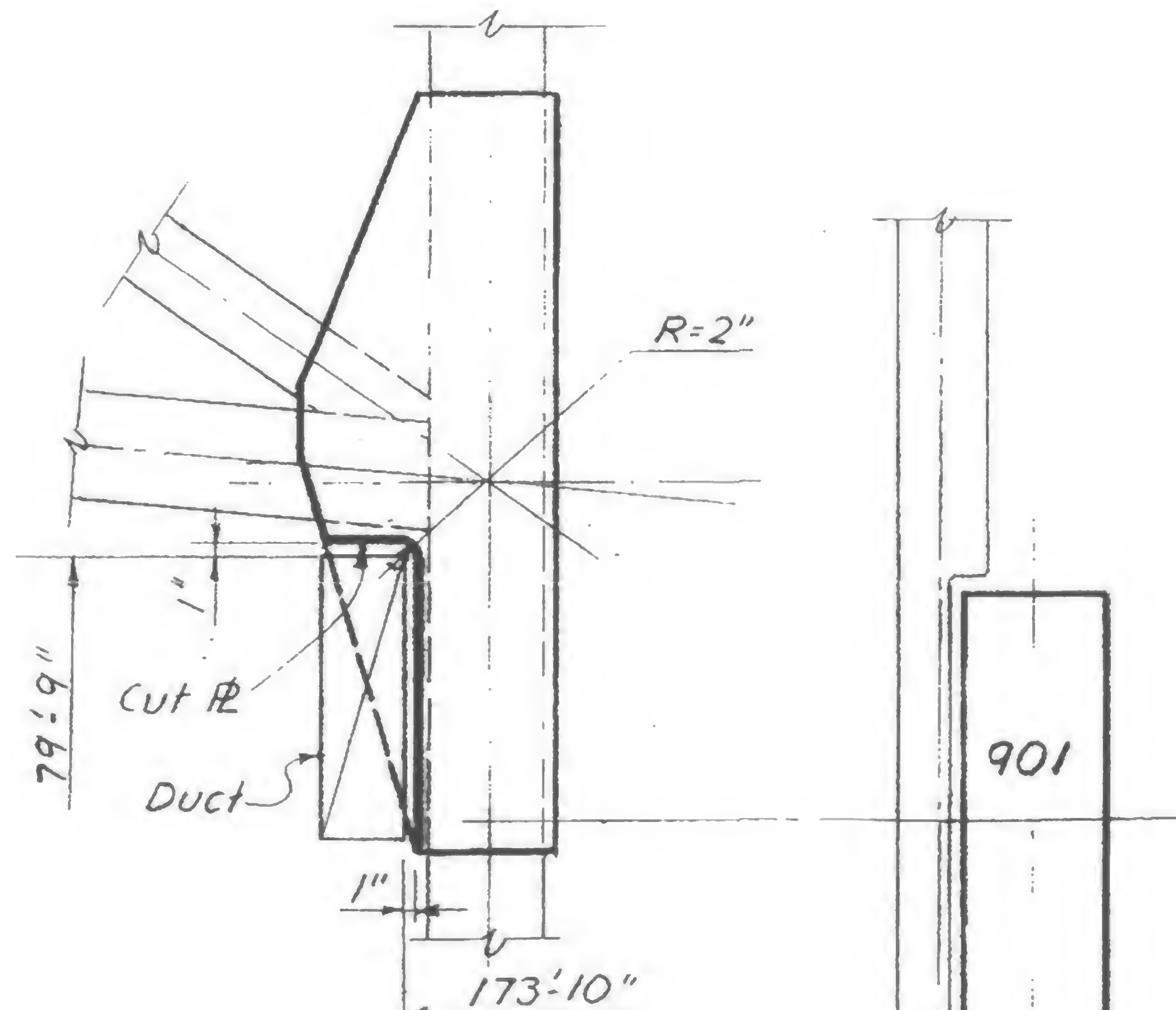
TITLE REVISIONS TO STRUCTURAL STEEL DETAIL 919

DATE 1-17-69

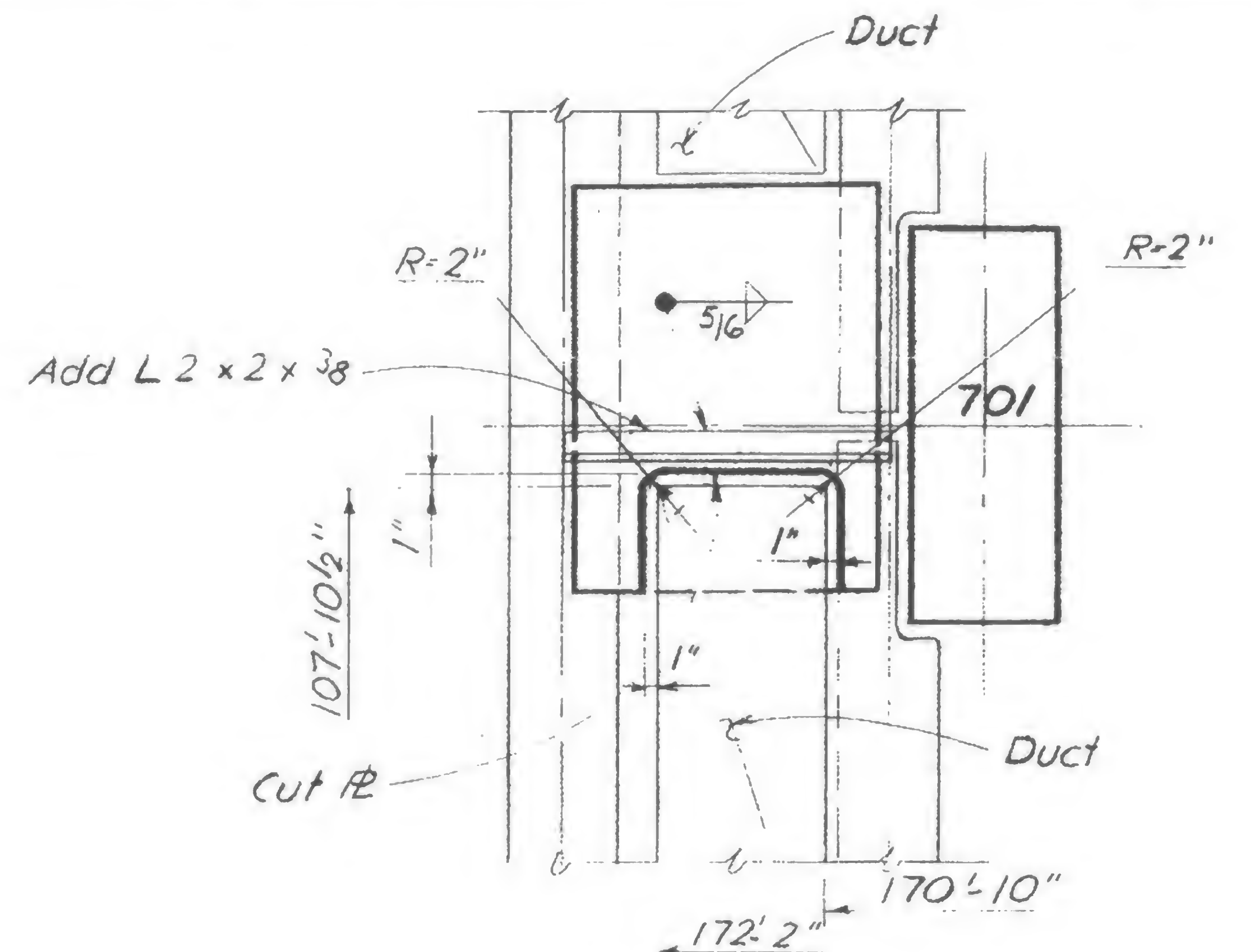
REVISIONS



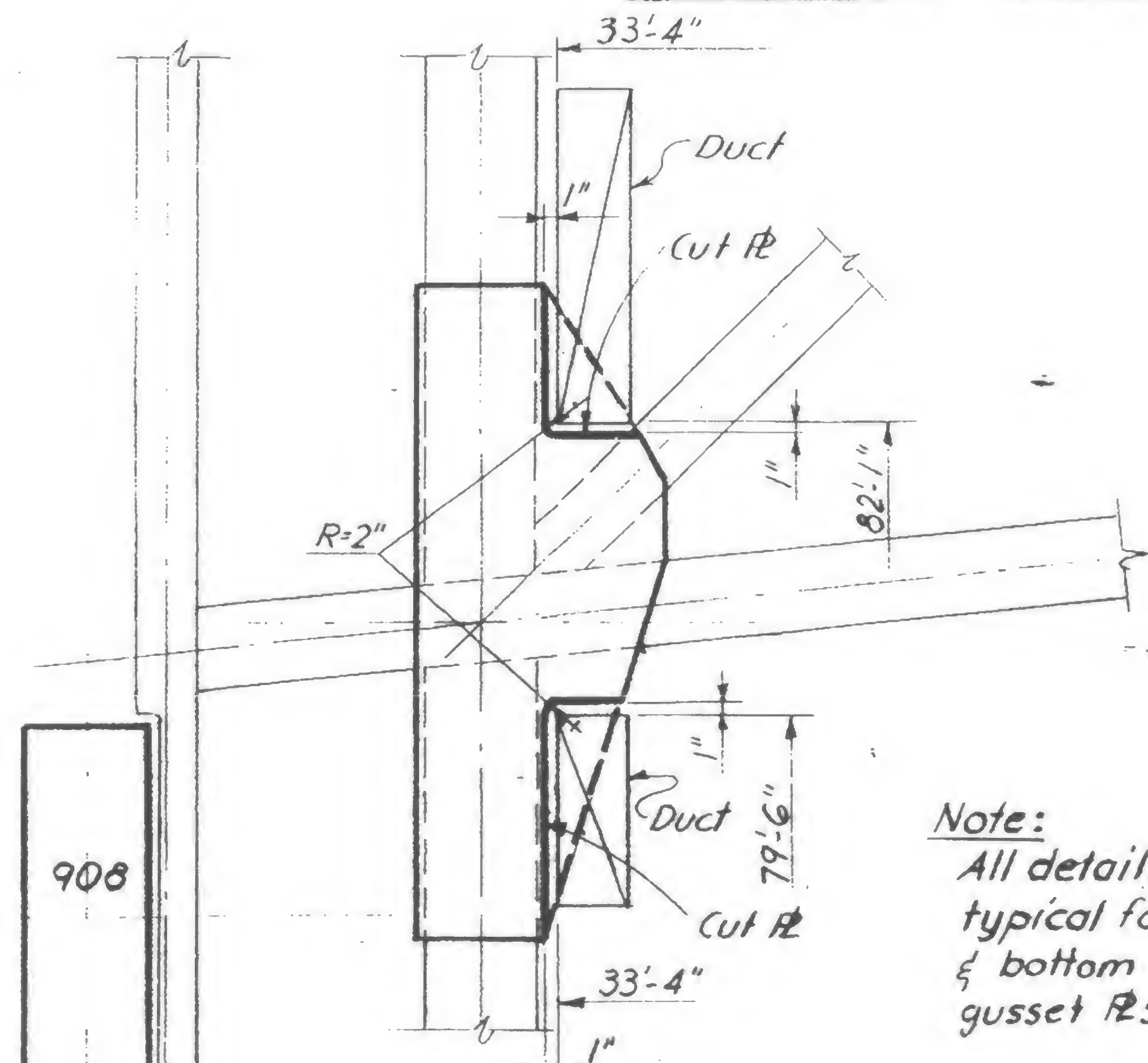
DETAIL 61  
Floor 2



DETAIL 63  
Floor 2



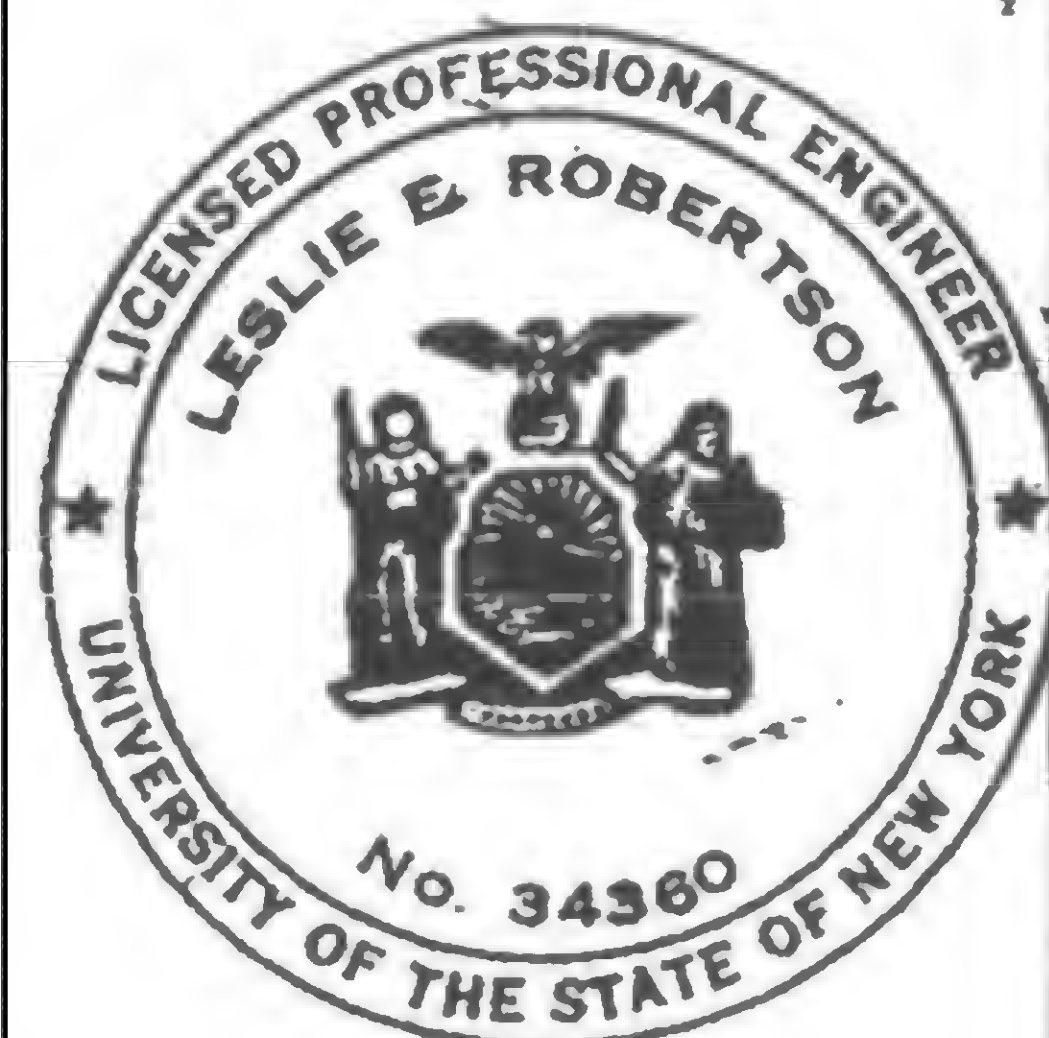
DETAIL 62 - Floor 2



DETAIL 64  
Floor 2

Note:  
All details  
typical for top  
& bottom  
gusset R's.

19 - AB - 919



DESIGNED

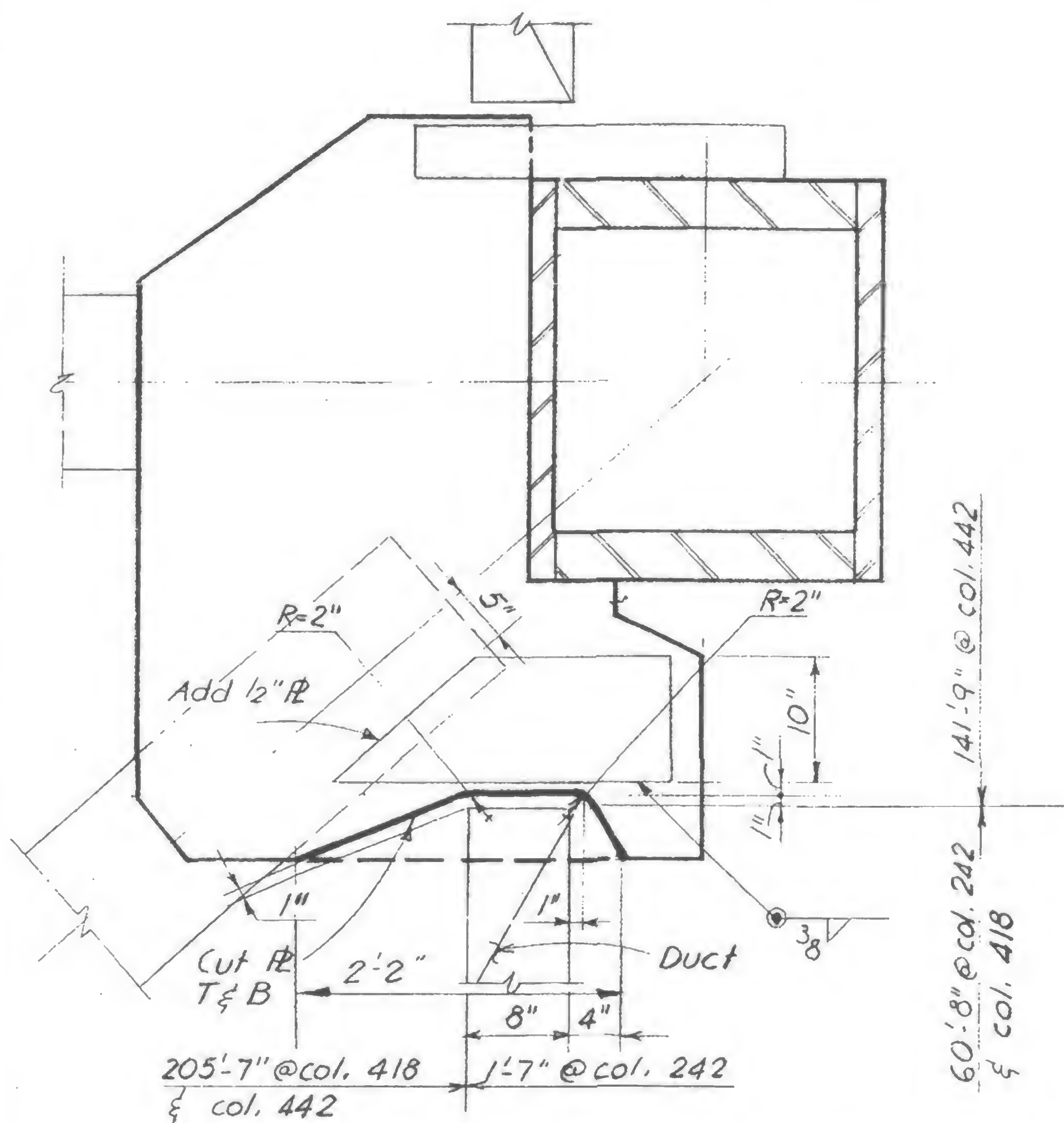
DRAWN

REVIEWED





## REVISIONS

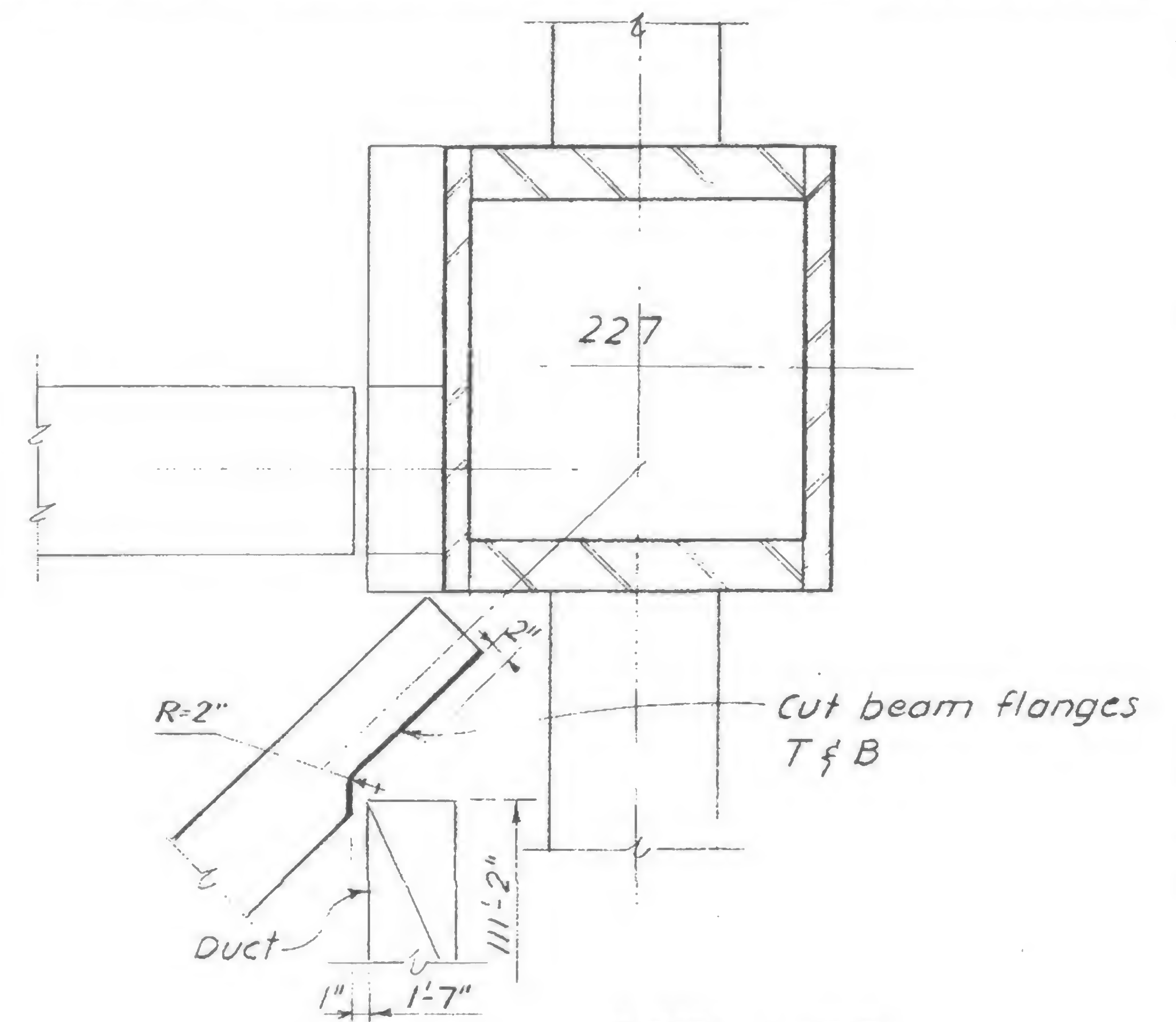


Details are typical for top  
& bottom gusset  $R$ s.

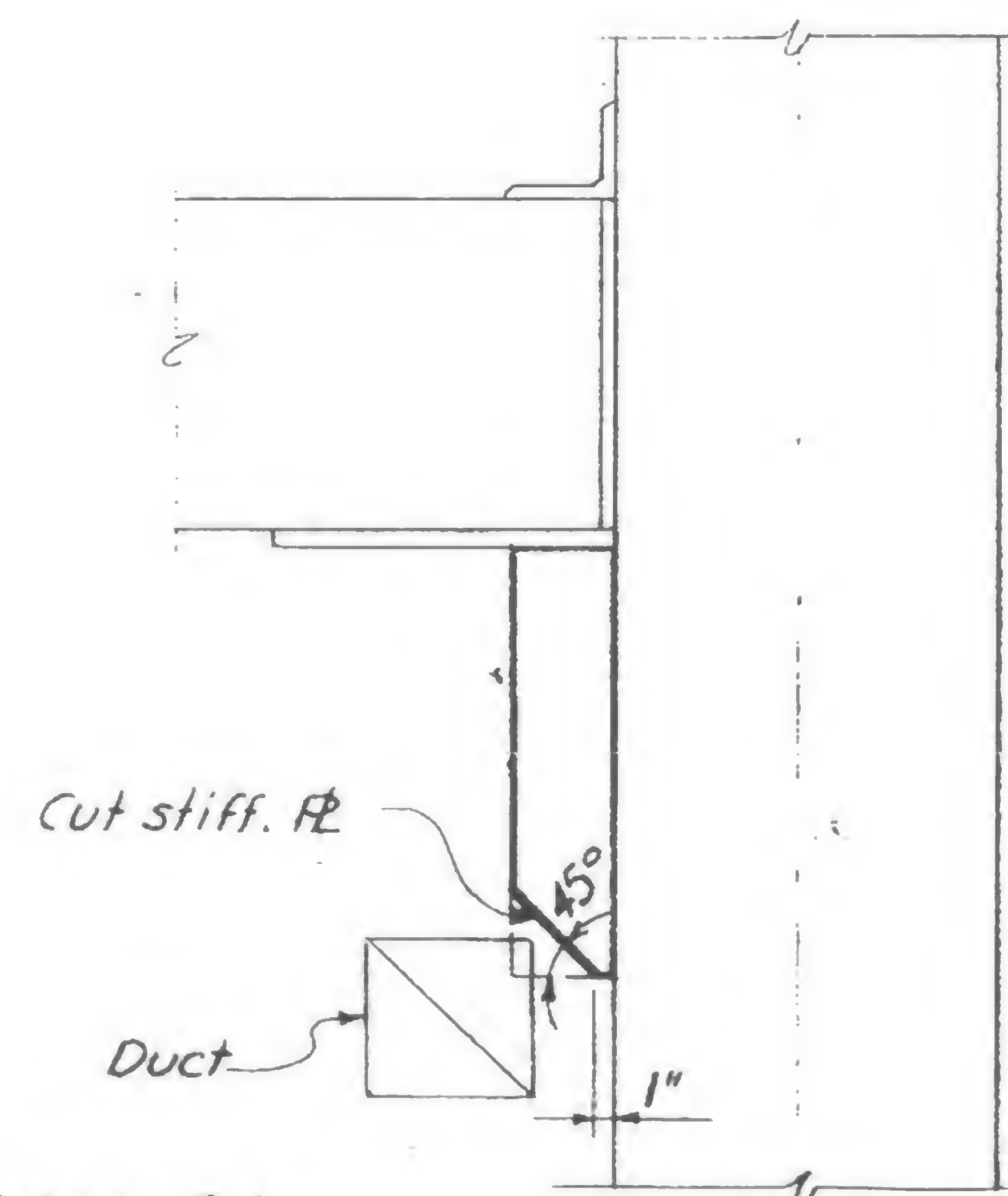
**DETAIL 65 - Exterior cols. 242 & 442**

**DETAIL 65 A (Opp. hand) - Exterior column 418**

**Floor 2**



**DETAIL 66**  
**Floor 2**

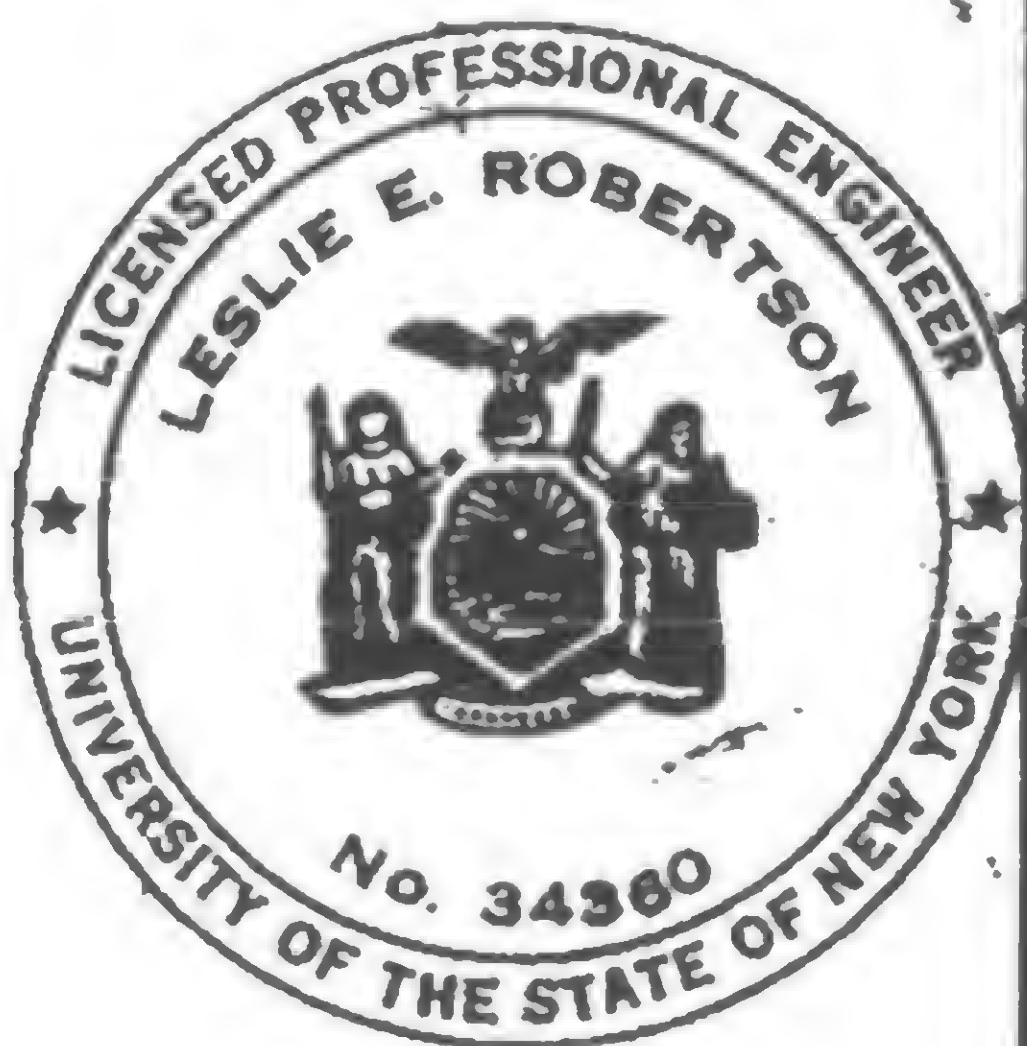


**DETAIL 51**  
**Floor 2**

**Elevation**

At exterior cols. 109, 151, 304 & 351

**19-AB-920**



DESIGNED

DRAWN

REVIEWED



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

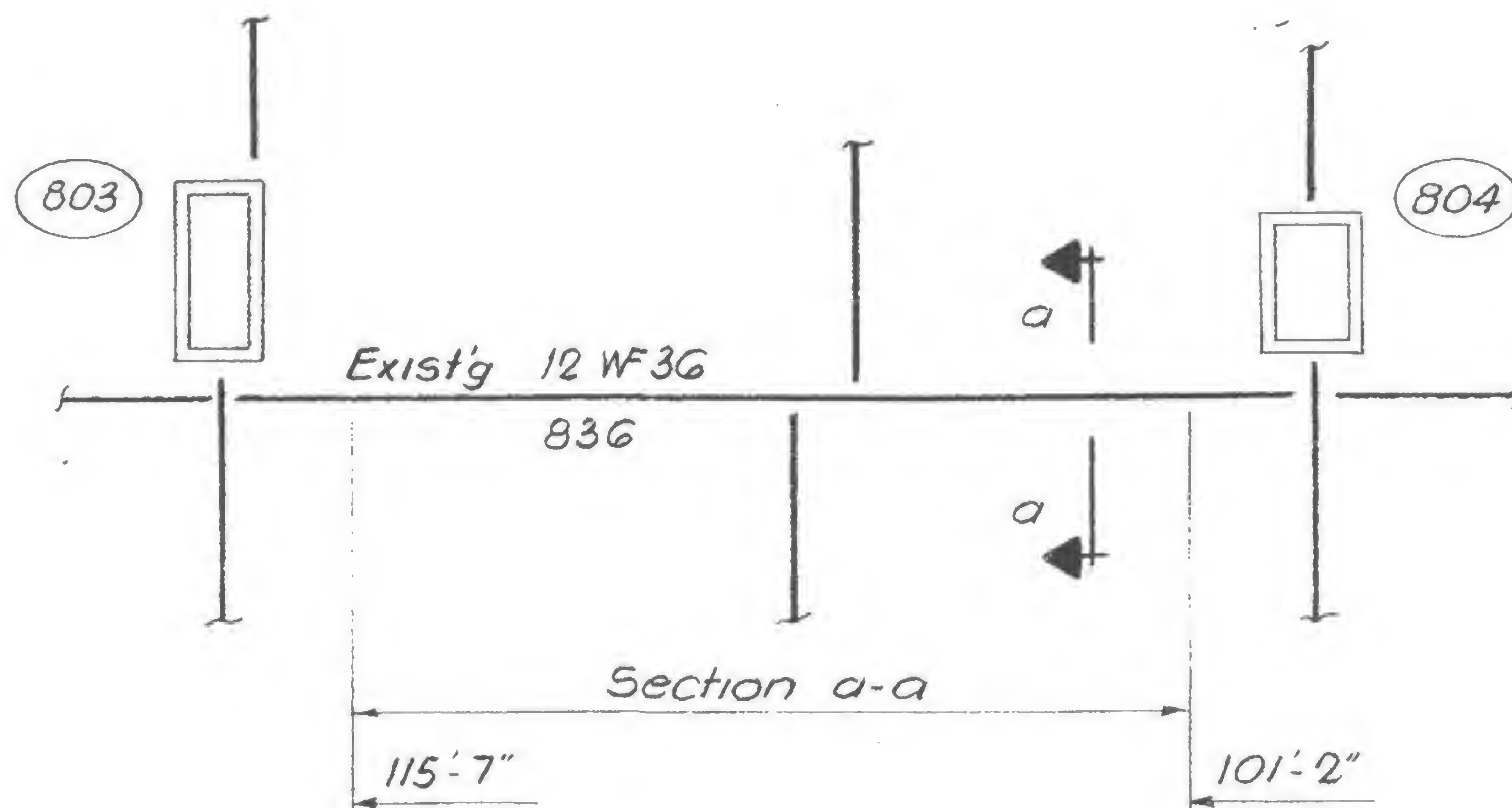
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

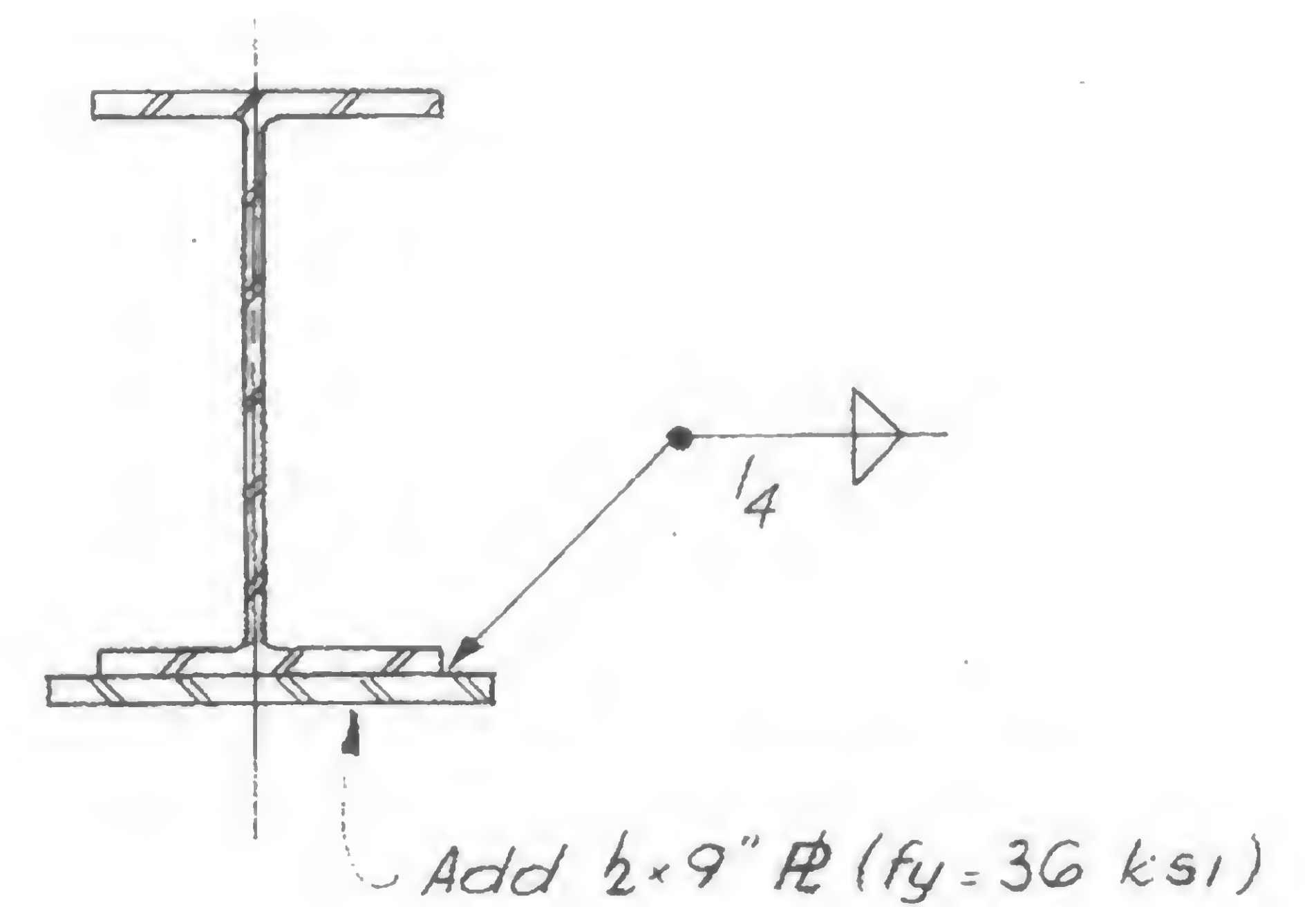
TITLE REVISION AFTER FABRICATION - DETAIL 921

DATE 1-27-69

REVISIONS



Part Plan - Elev. 284'-0"  
Tower A



Section a-a



DESIGNED *W. Bonassante*

DRAWN G.T. HELLEBRANTH

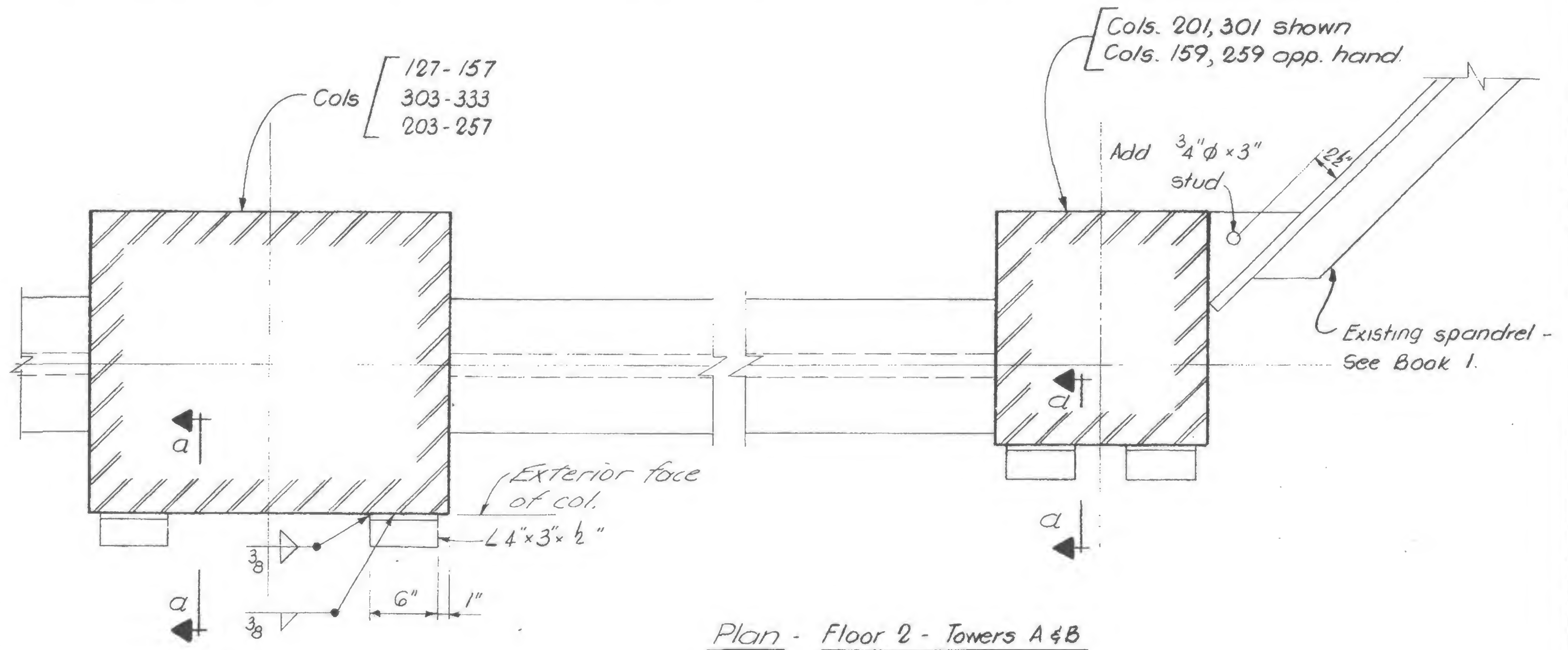
REVIEWED *W. Brewer*

19-A-921

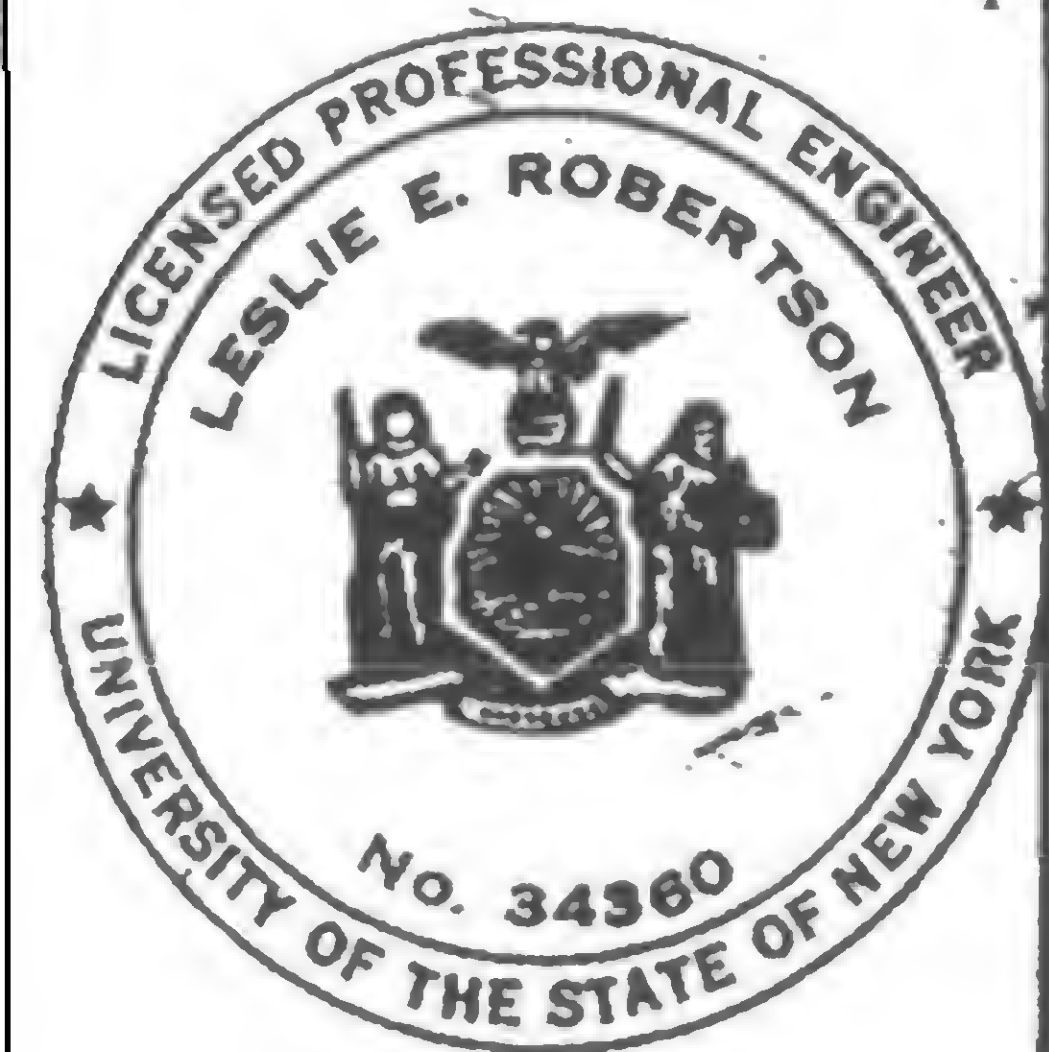
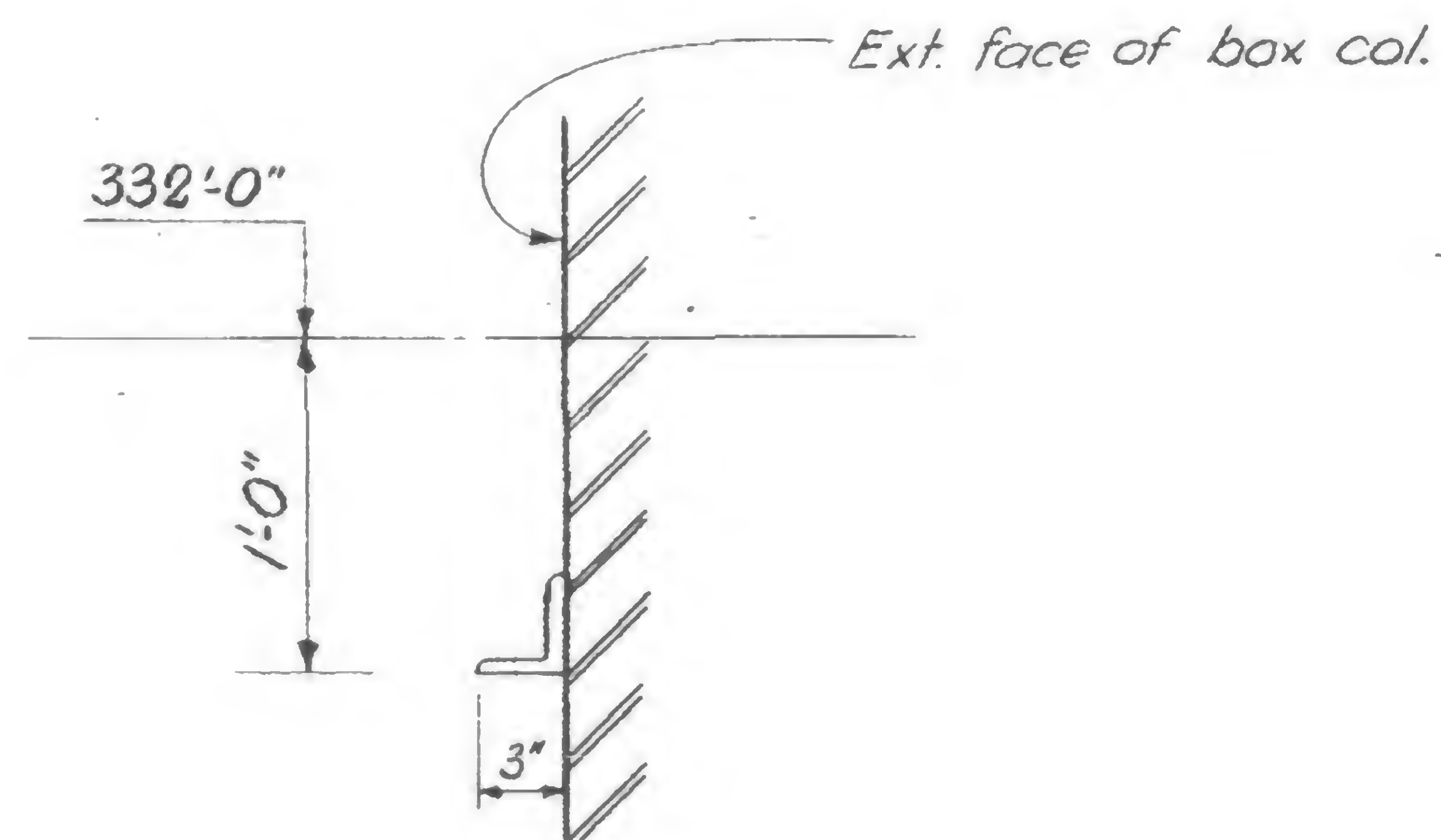




## REVISIONS



Add two L's per column. Details  
shown are typical for all  
added L's.



DESIGNED

ALA

DRAWN

G. T. Hellebranth.

REVIEWED





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

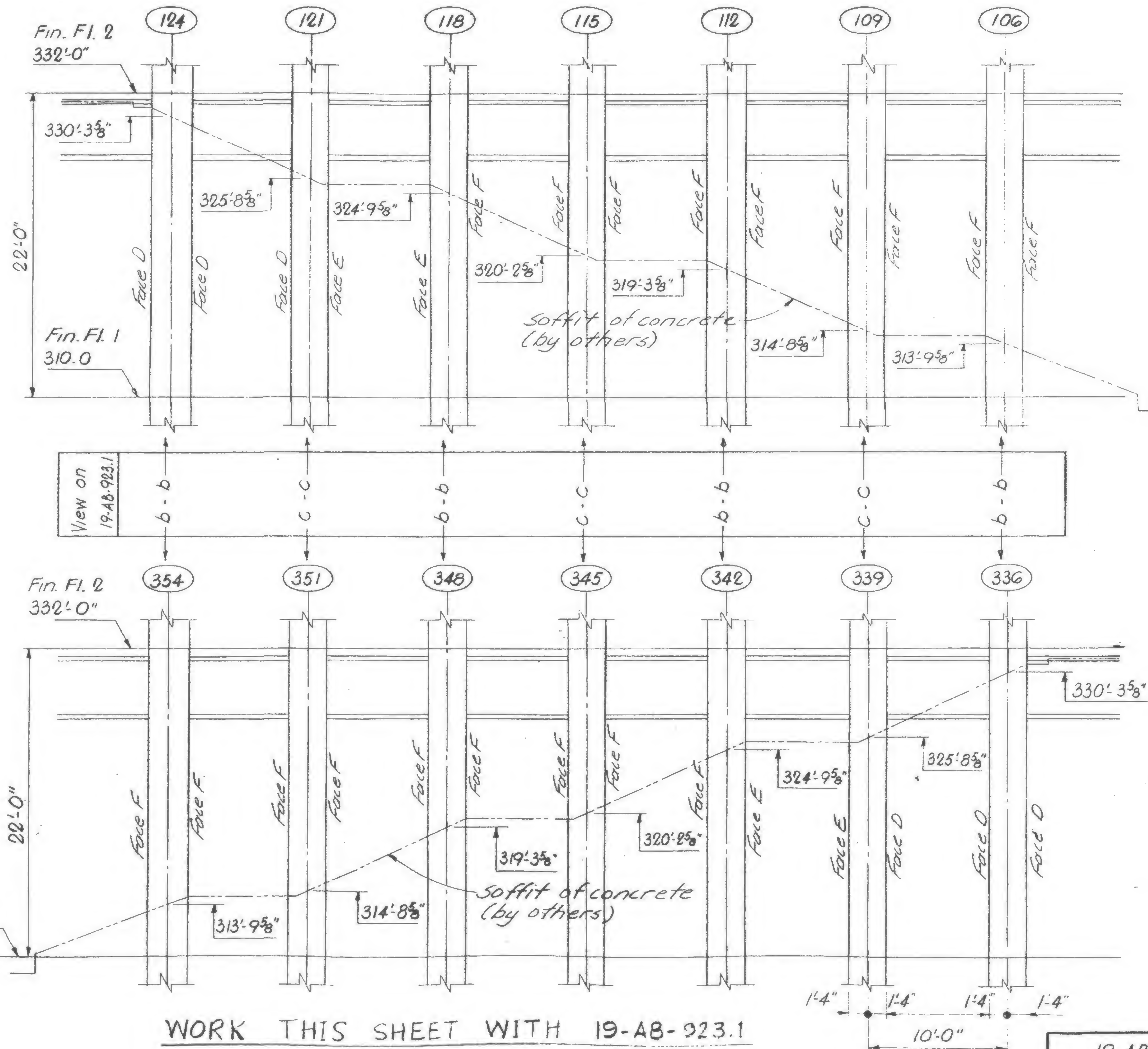
Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION - DETAIL 923

DATE 3-19-69

REVISIONS



WORK THIS SHEET WITH 19-AB-923.1

19-AB-923



DESIGNED

A.L.A.

DRAWN

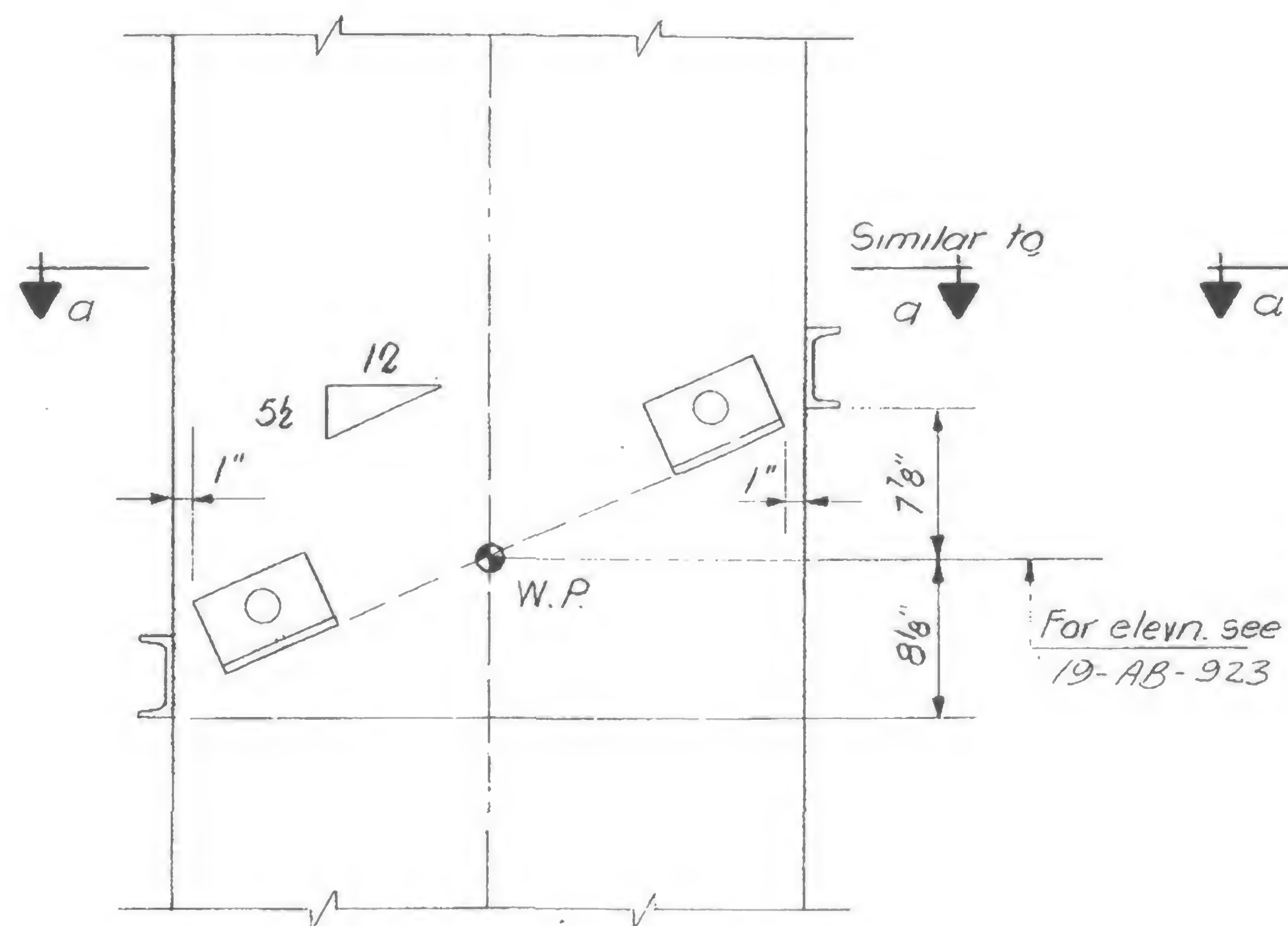
G.T. Hellebranth

REVIEWED

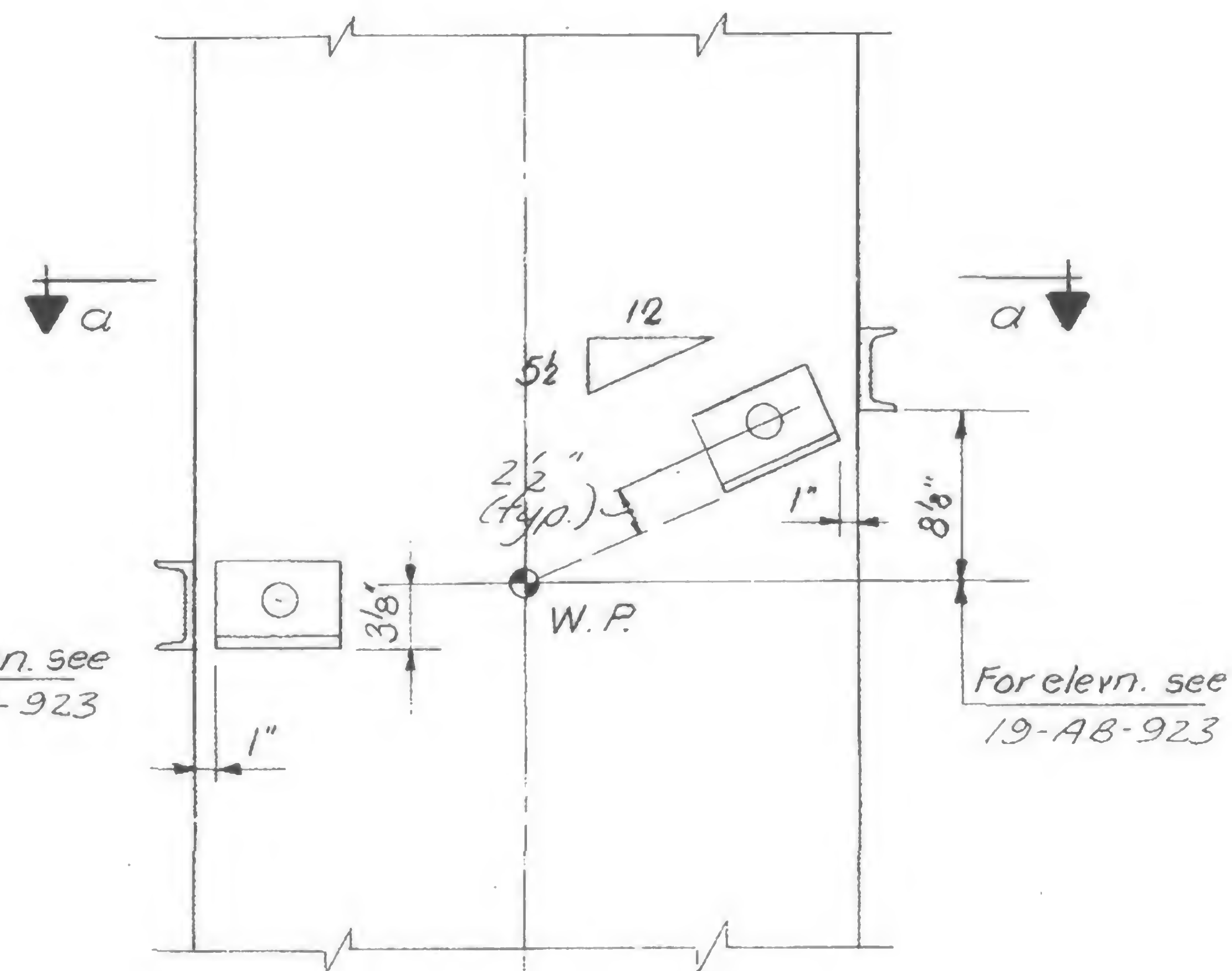




## REVISIONS



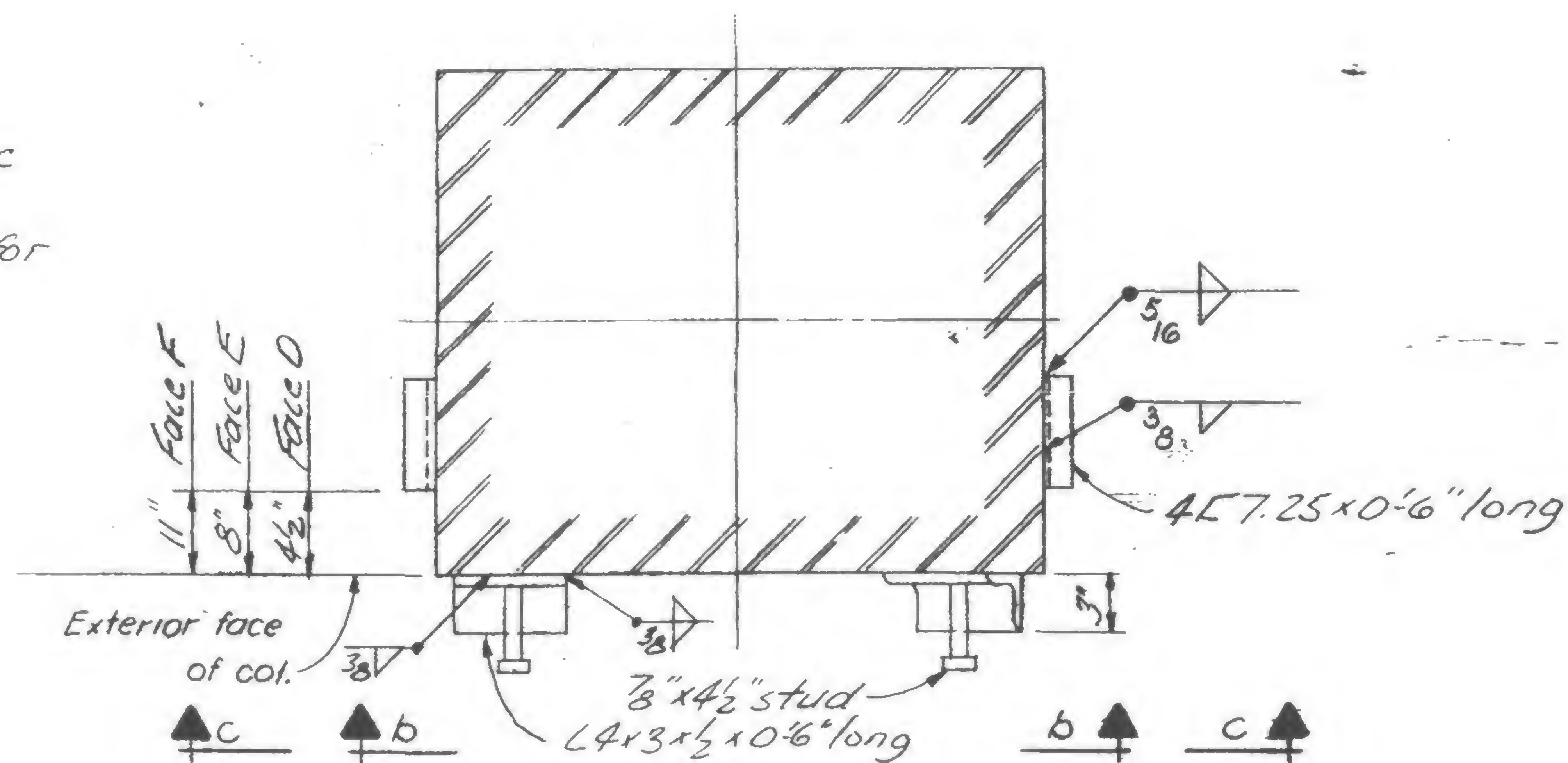
View b-b  
(at top of stair run by others)



View C-C  
(at bottom of stair run by others)

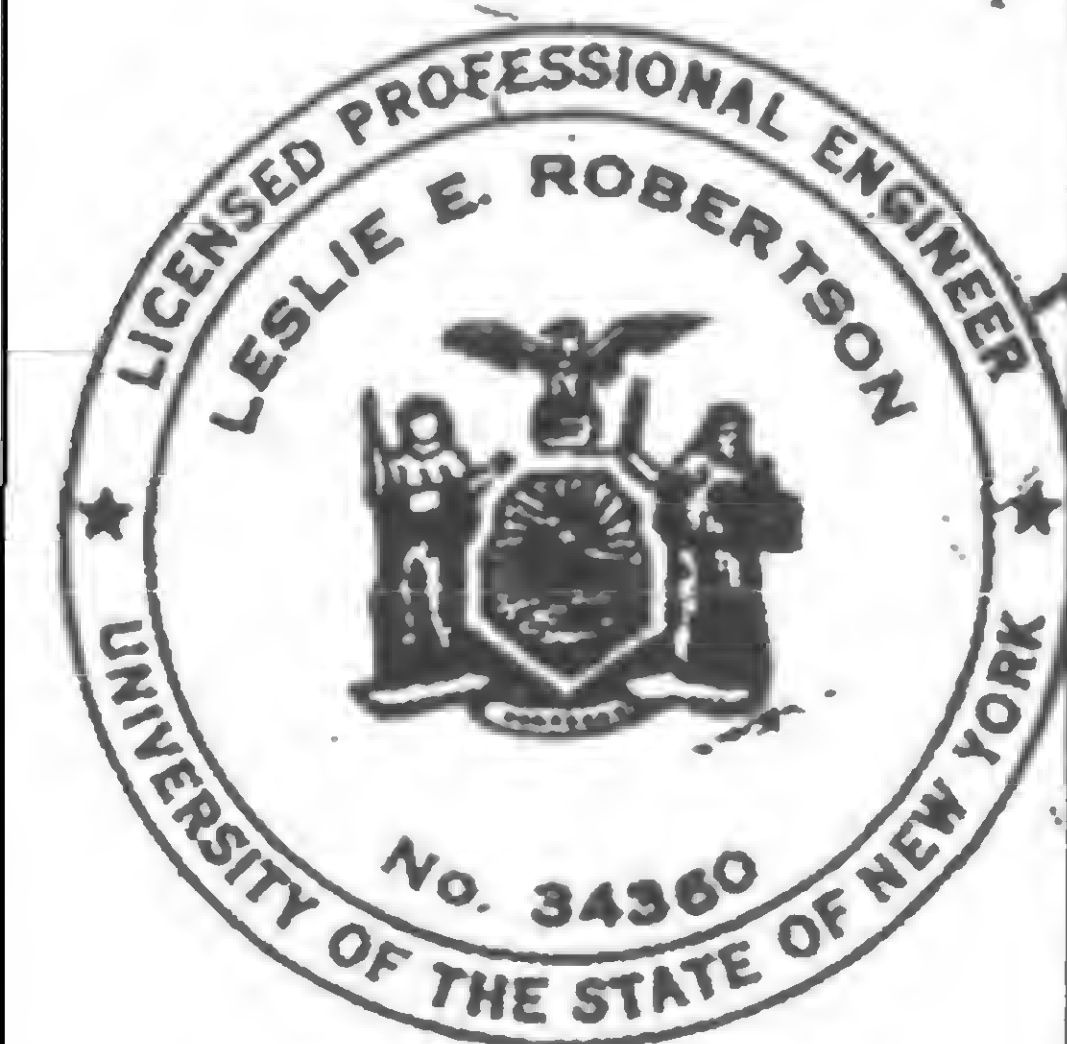
Notes:

1. For columns where views b-b or c-c apply see 19-AB-923
2. Use views b-b and c-c as shown for cols 336-354, opp. hand for cols 106-124.
3. For location of Faces D, E, F see 19-AB-923



Plan a-a

19-AB-923.1



**DESIGNED**

A.L.A.

**DRAWN**

G.T. Hellebranth.

REVIEWED



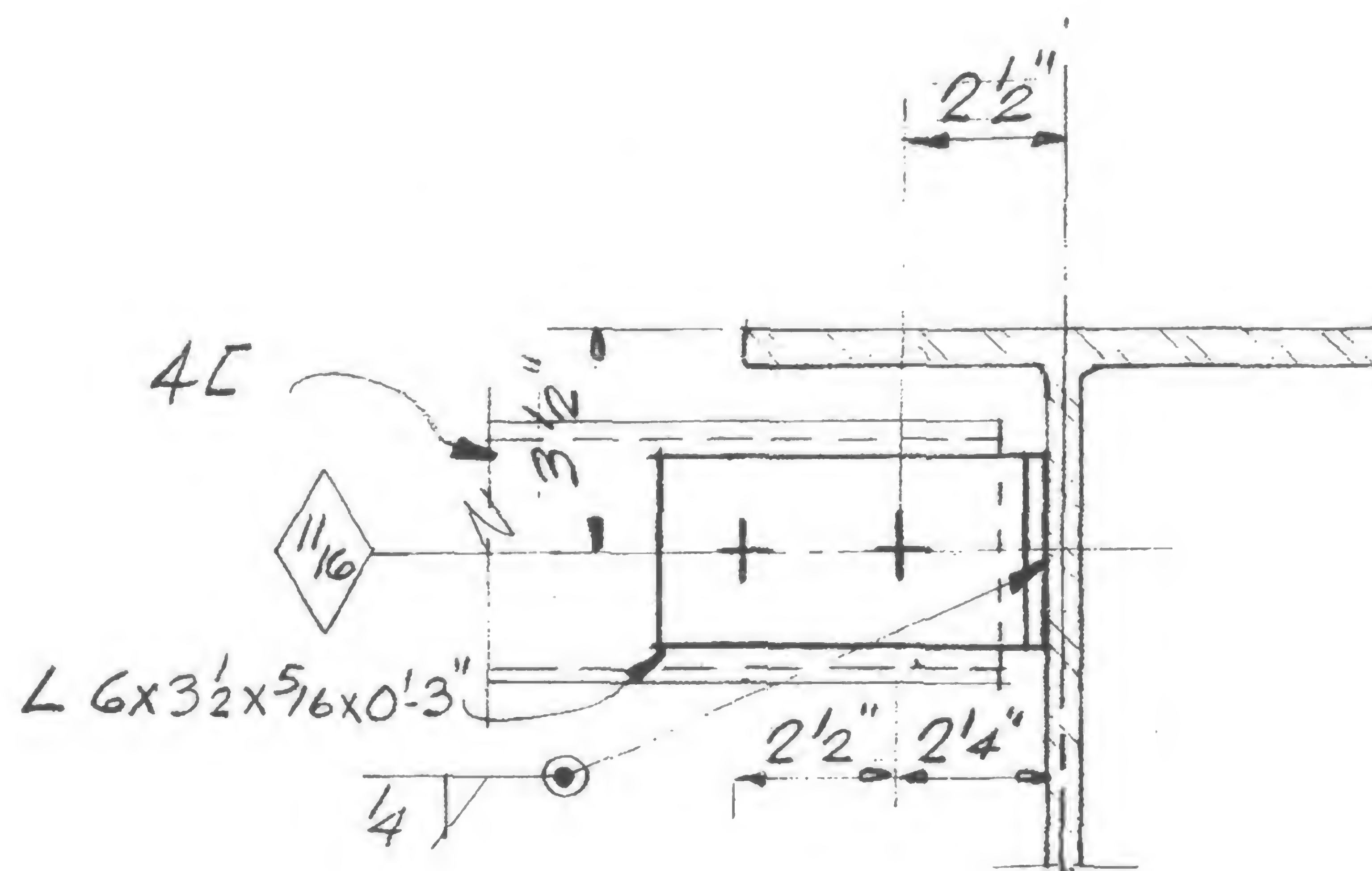


SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTERTITLE REVISION AFTER FABRICATION-DETAIL 925DATE 3-13-69

REVISIONS

Clip Detail

2 existing 4C's relocated floor 7,  
Tower A, & 2 relocated floor 7, Tower B  
Abandon existing clips & furnish  
and install 4 new clips each tower.  
See clip detail above and see  
SA-15 & SB-15 for location.



DESIGNED

DRAWN

REVIEWED

W. Brewer

19-AB-925



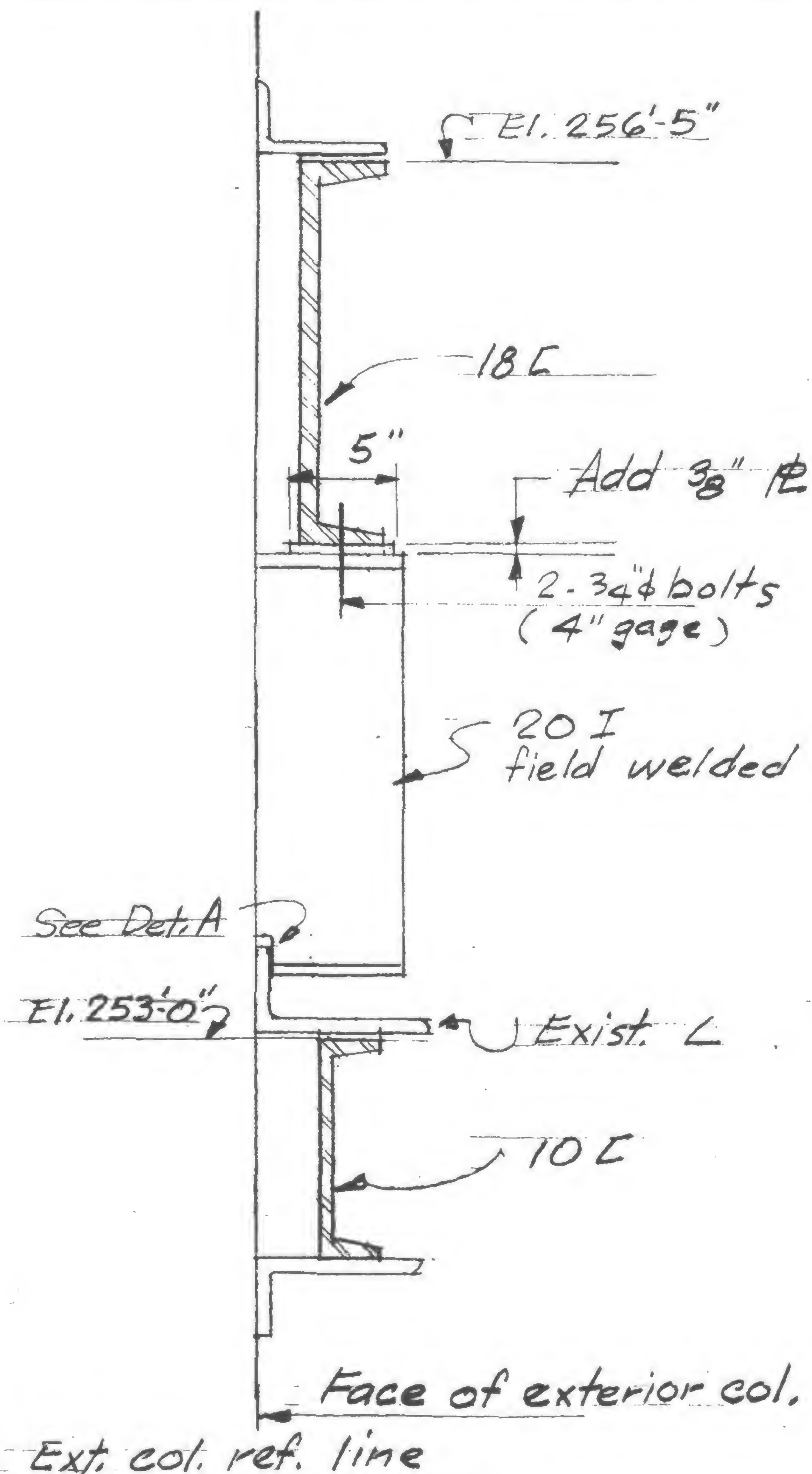
SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER TITLE REVISION AFTER FABRICATION-DETAIL 926

DATE 3-14-69

REVISIONS



See Det. A

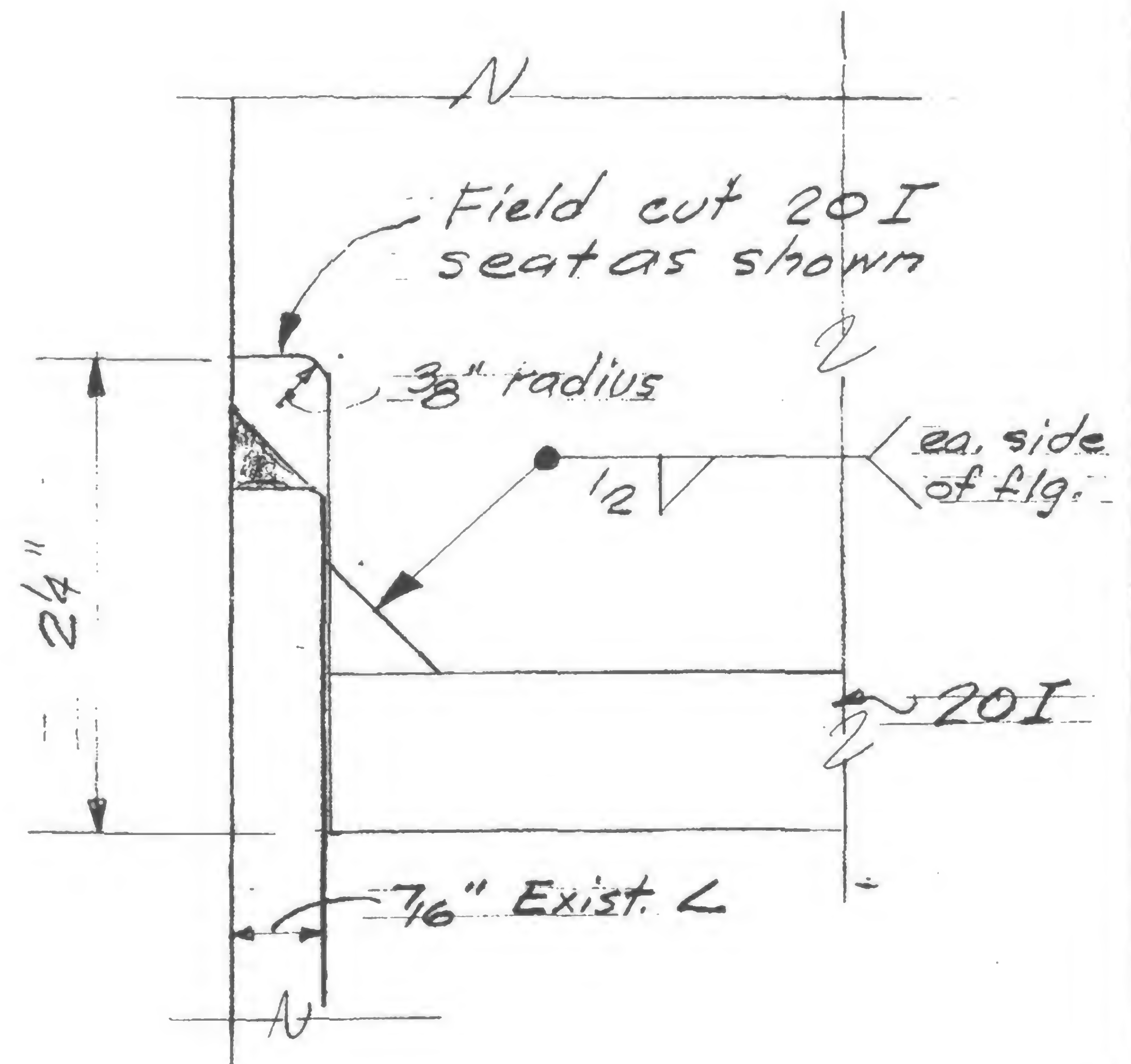
El. 253'-0"

Exist. L

10L

Face of exterior col.

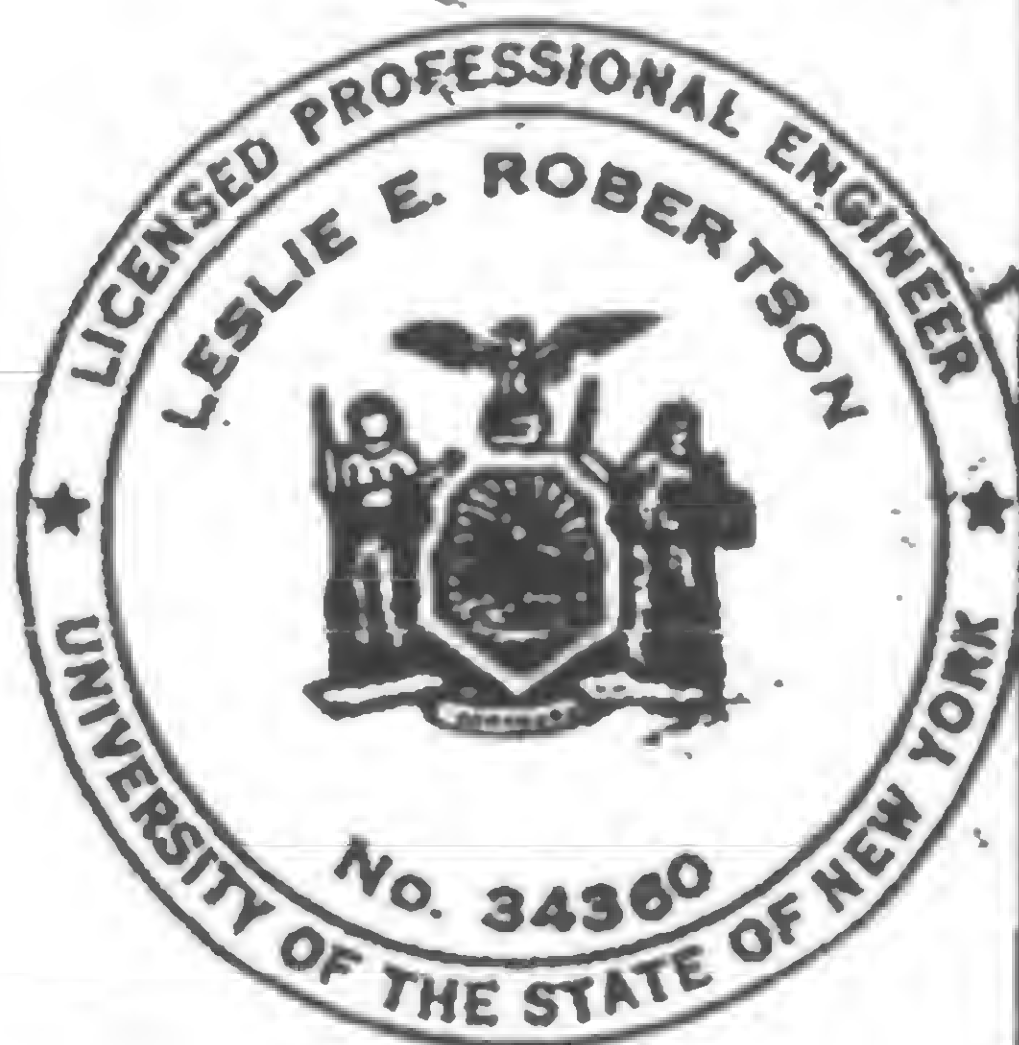
Ext. col. ref. line

SECTION AT  
SOUTH WALL TOWER A

DETAIL A

Note: See SA-3 for location.  
See WTC 220.00  
field weld details  
dwg. FW-36 for details  
not shown.

19-A-926



DESIGNED  
H. ROET  
DRAWN

REVIEWED  
W. Brewer



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

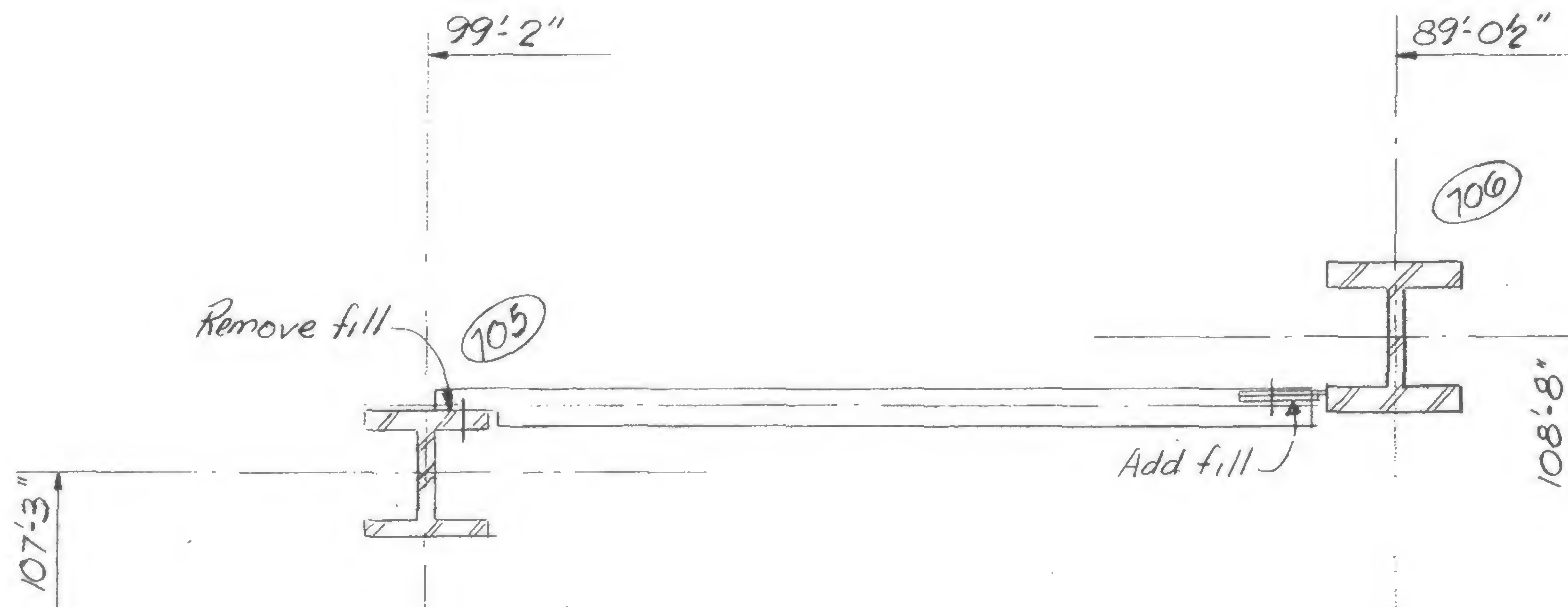
Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION - DETAIL 927

DATE 3-21-69

REVISIONS



DESIGNED  
S. Kay  
DRAWN  
S. Kay  
REVIEWED

19-AB-927



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

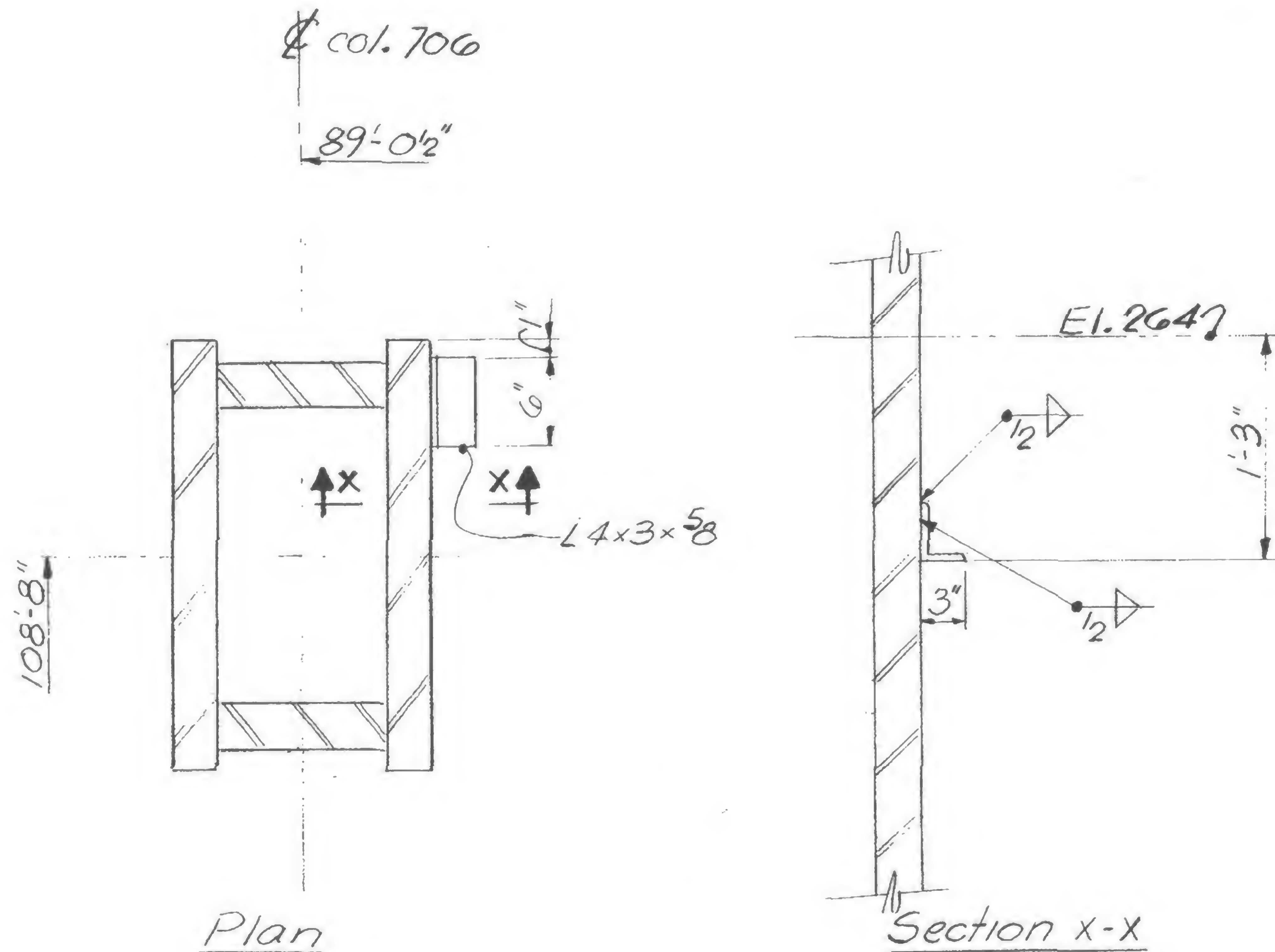
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

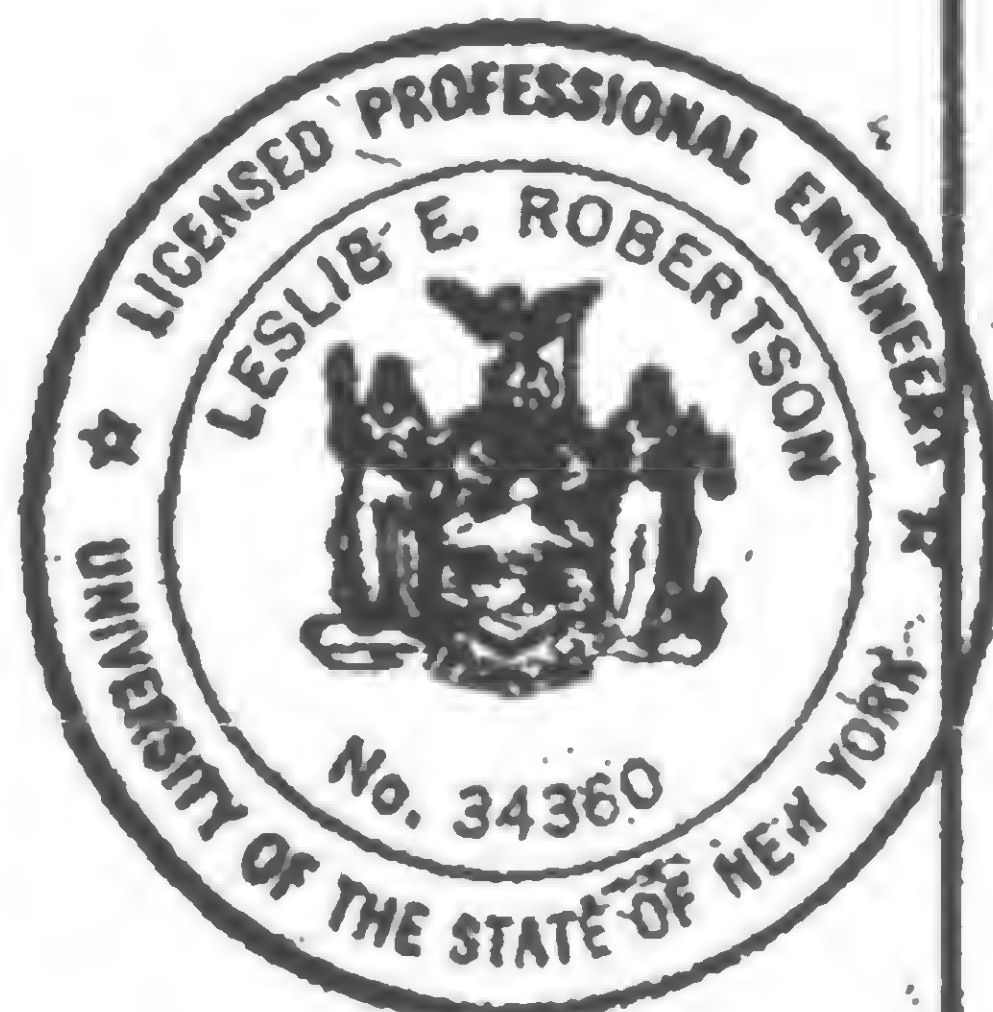
TITLE REVISION AFTER FABRICATION - DETAIL 928

DATE 5-9-69

REVISIONS



Tower B - Sub Level 3 - El. 264



DESIGNED  
A.L.A.

DRAWN  
S. Kay  
REVIEWED

19-B-928

PROJECT

THE WORLD TRADE CENTER

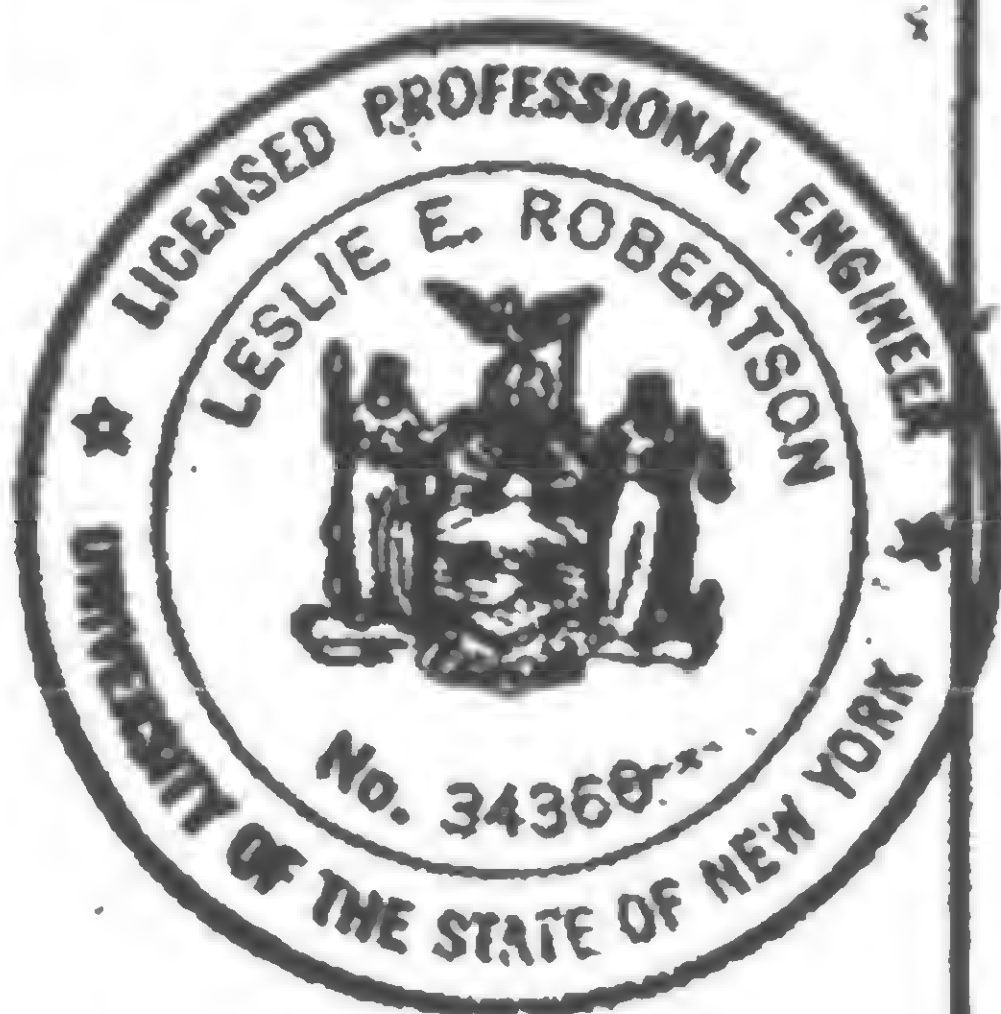
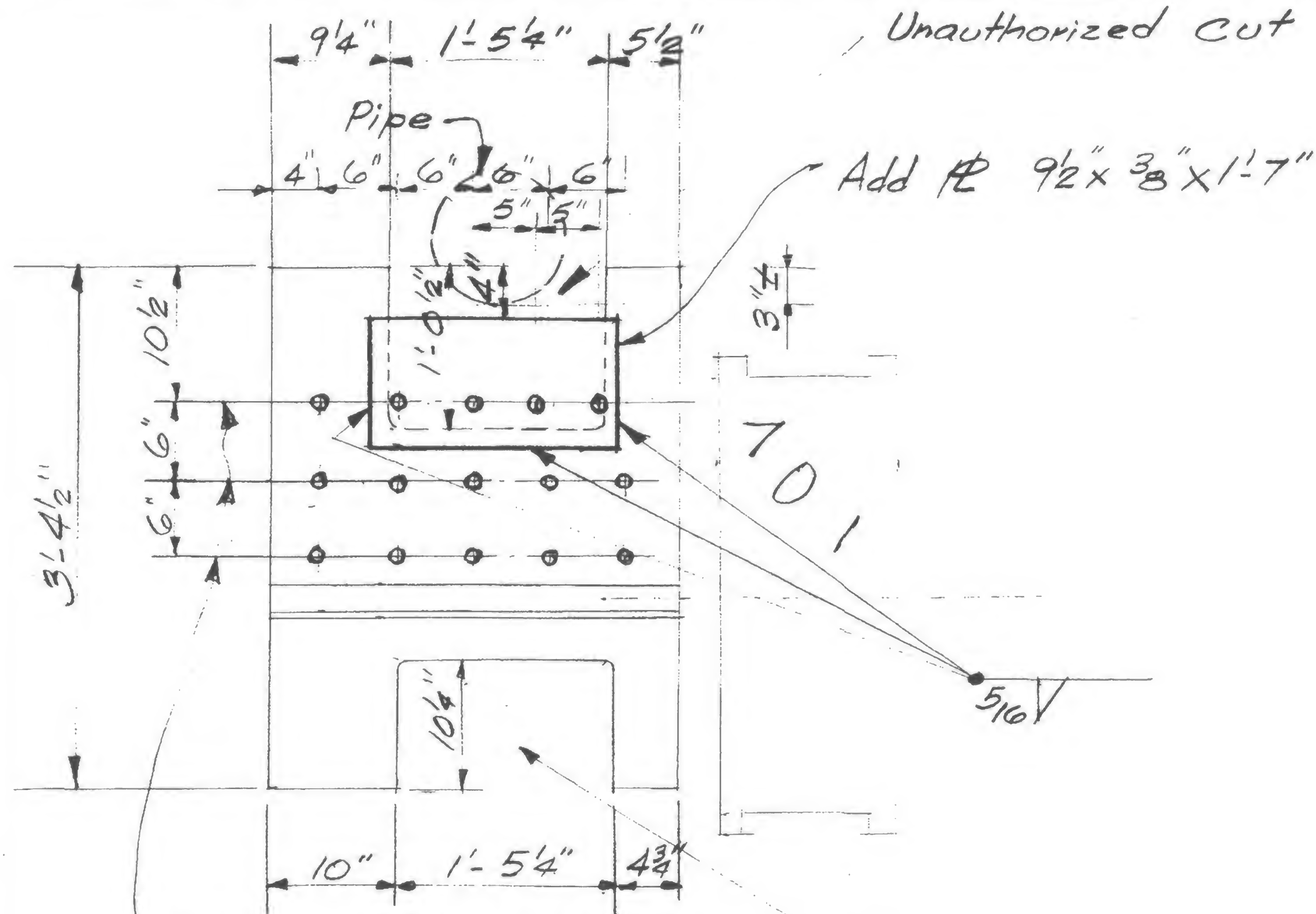
TITLE

TOWER A, COLUMN 701, FLOOR 2

DATE

6/13/69

## REVISIONS



DESIGNED

DRAWN

REVIEWED

W. Brewer

19-A-929





PROJECT

THE WORLD TRADE CENTER

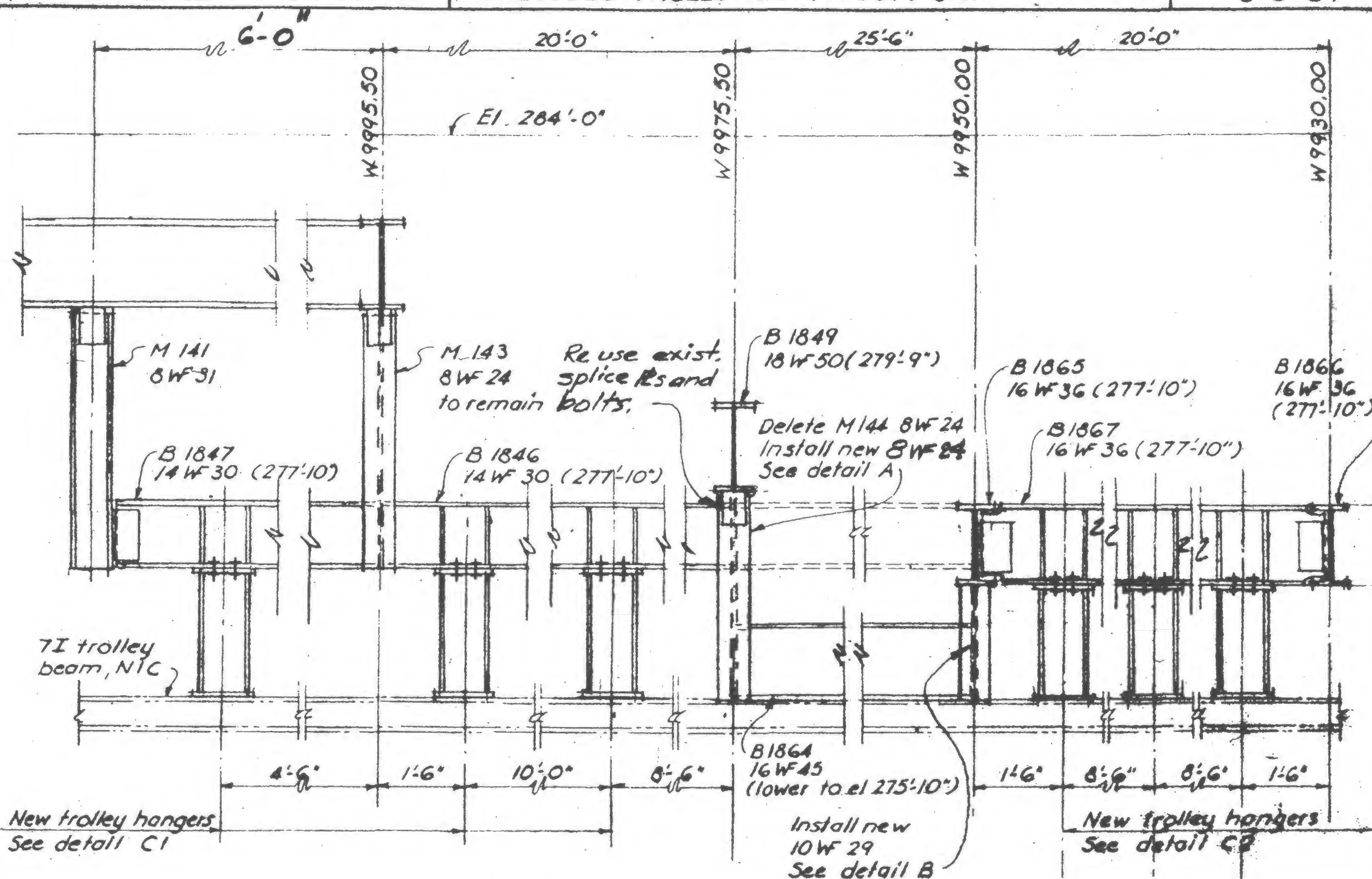
TITLE

REVISED TROLLEY BEAM SUPPORT

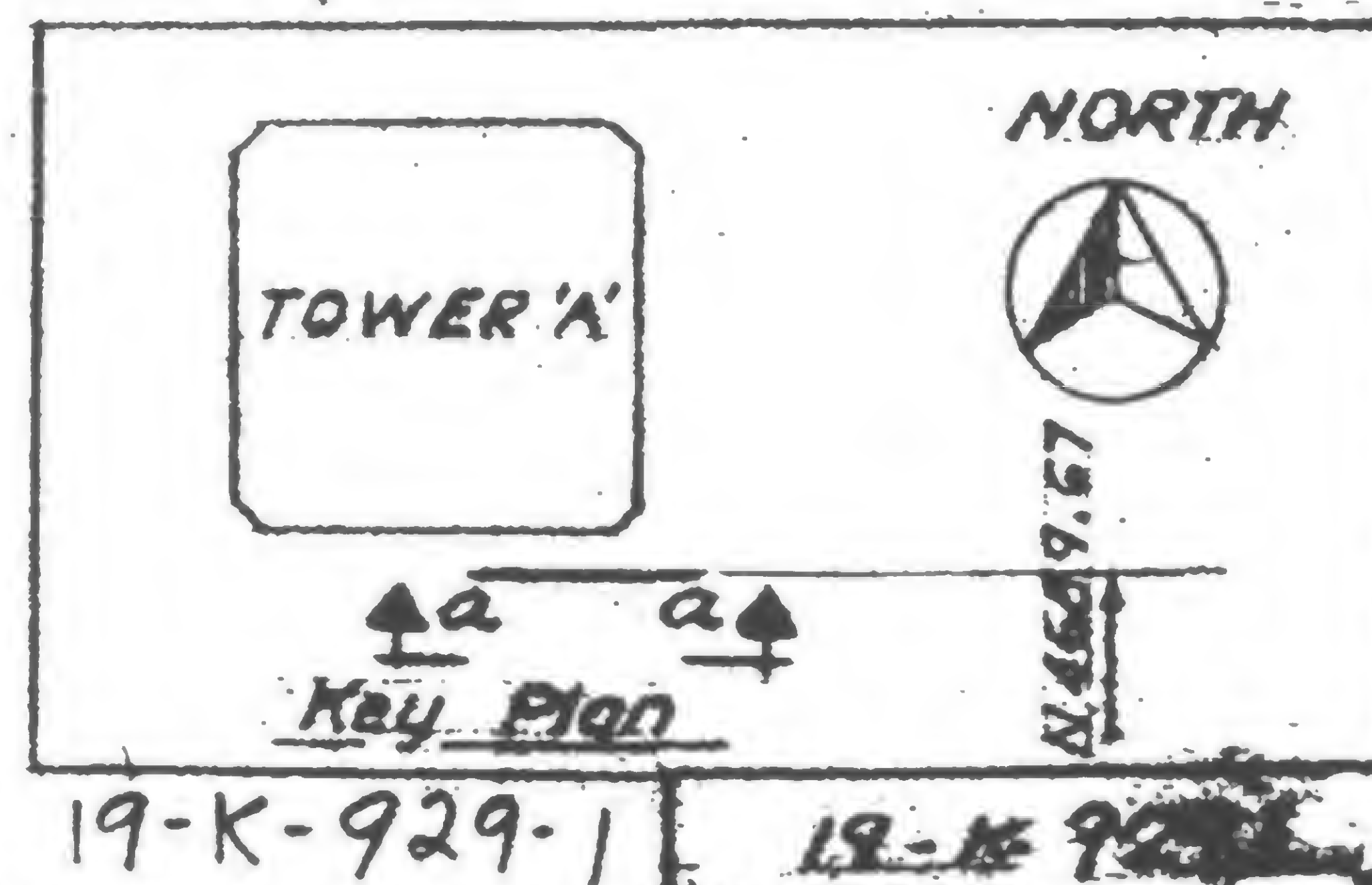
DATE

6-6-69

REVISIONS



## SECTION A-A





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT

THE WORLD TRADE CENTER

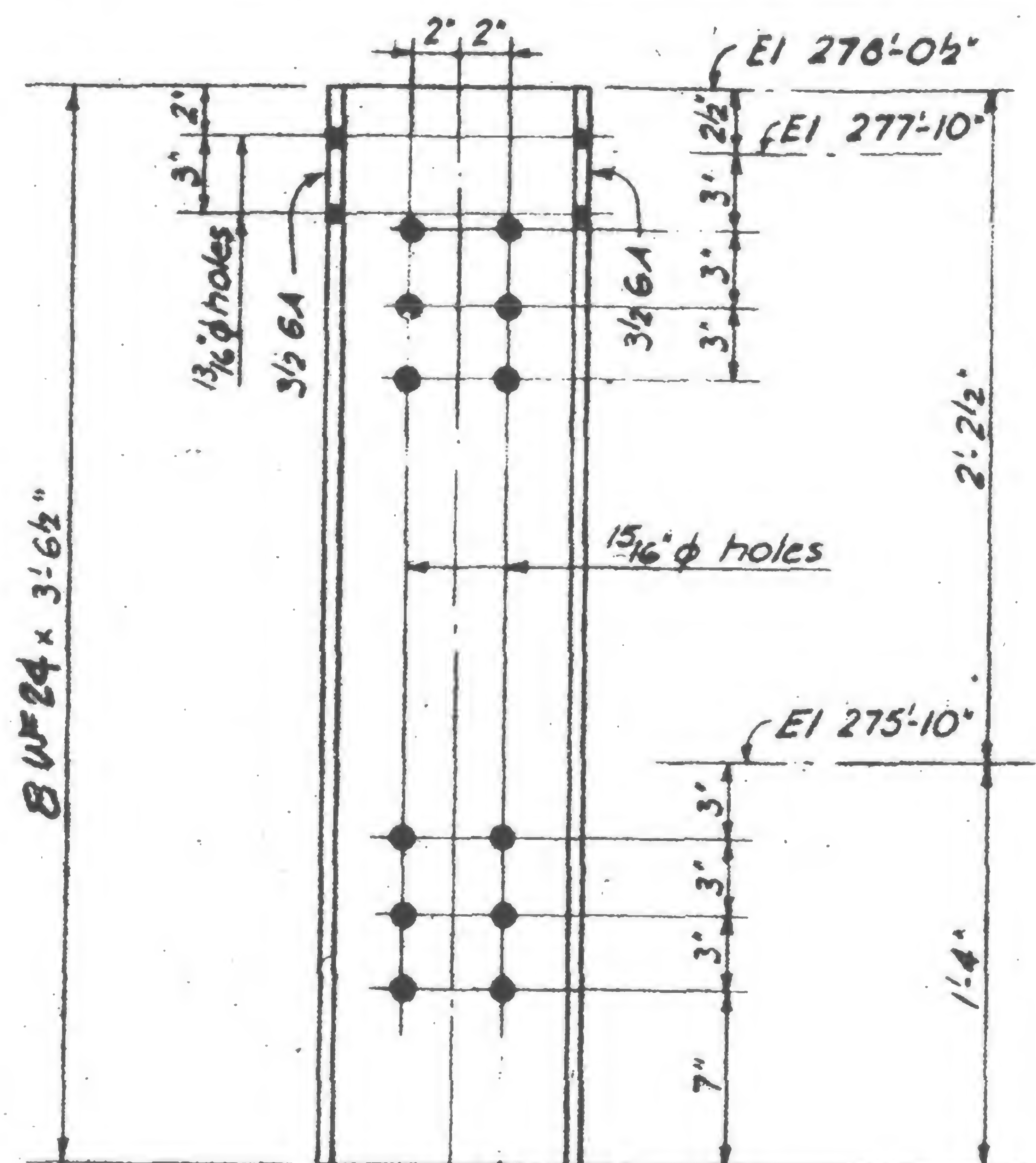
TITLE

REVISED TROLLEY BEAM SUPPORT-DETAILS

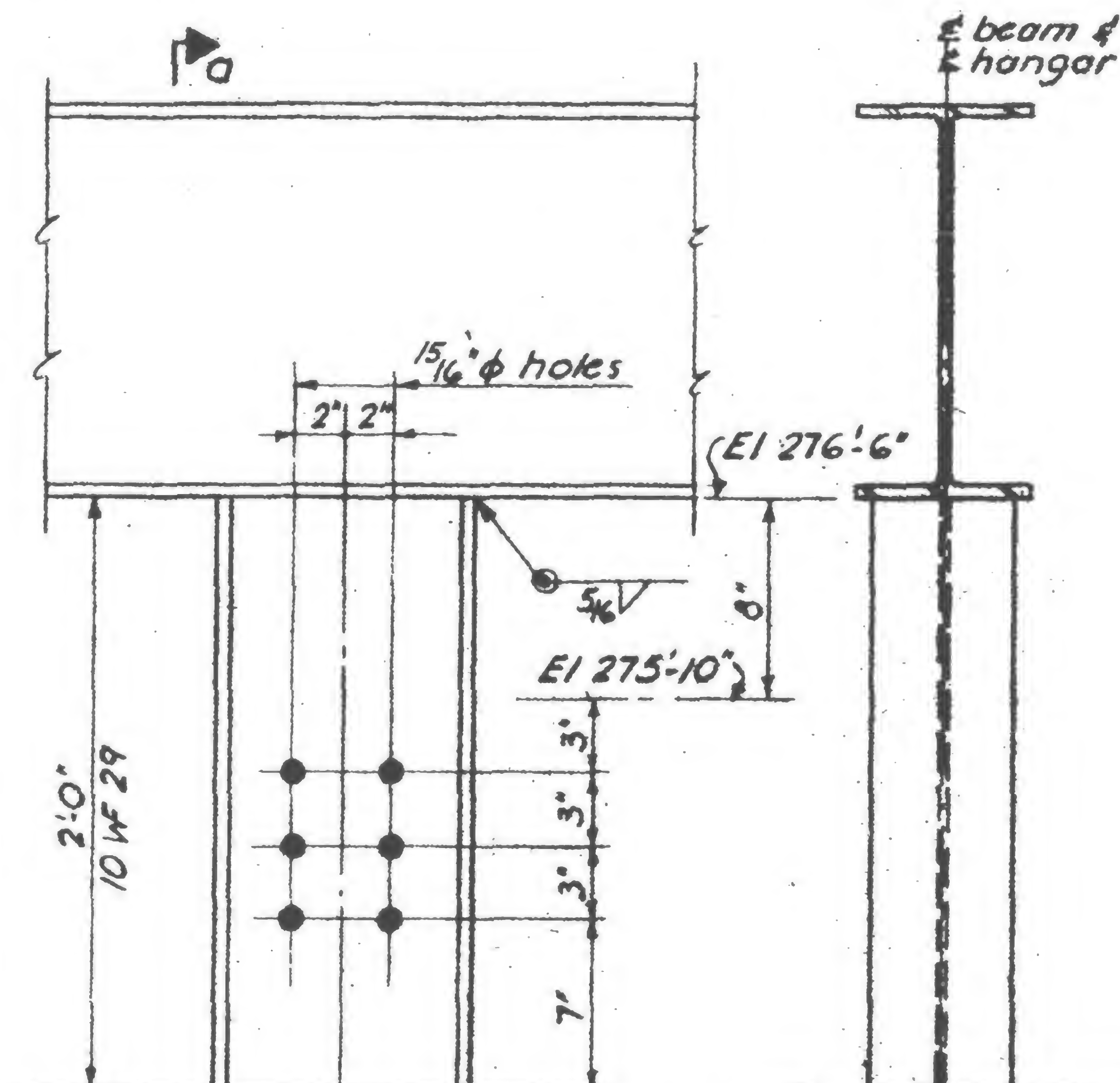
DATE

6-6-69

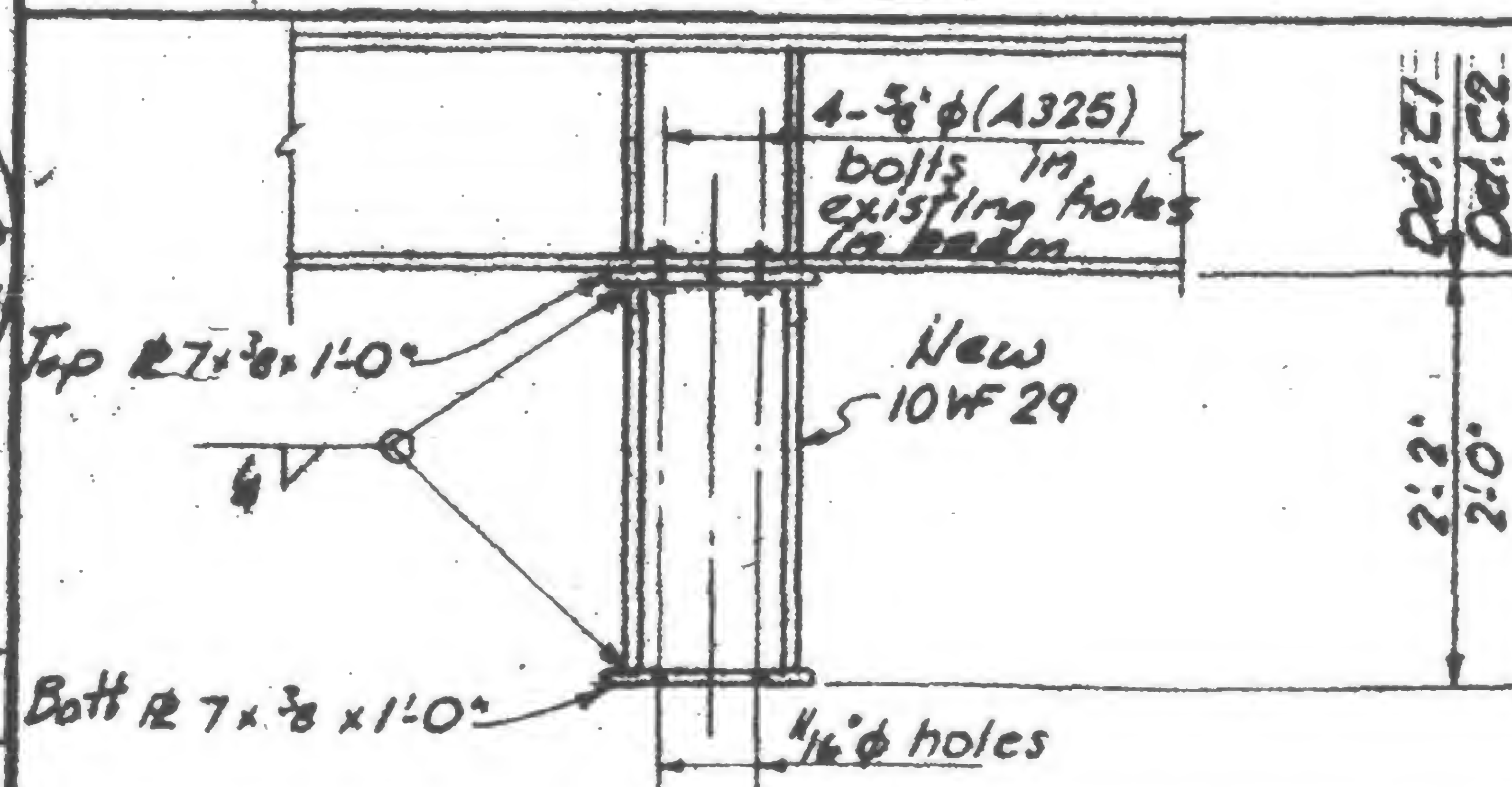
REVISIONS



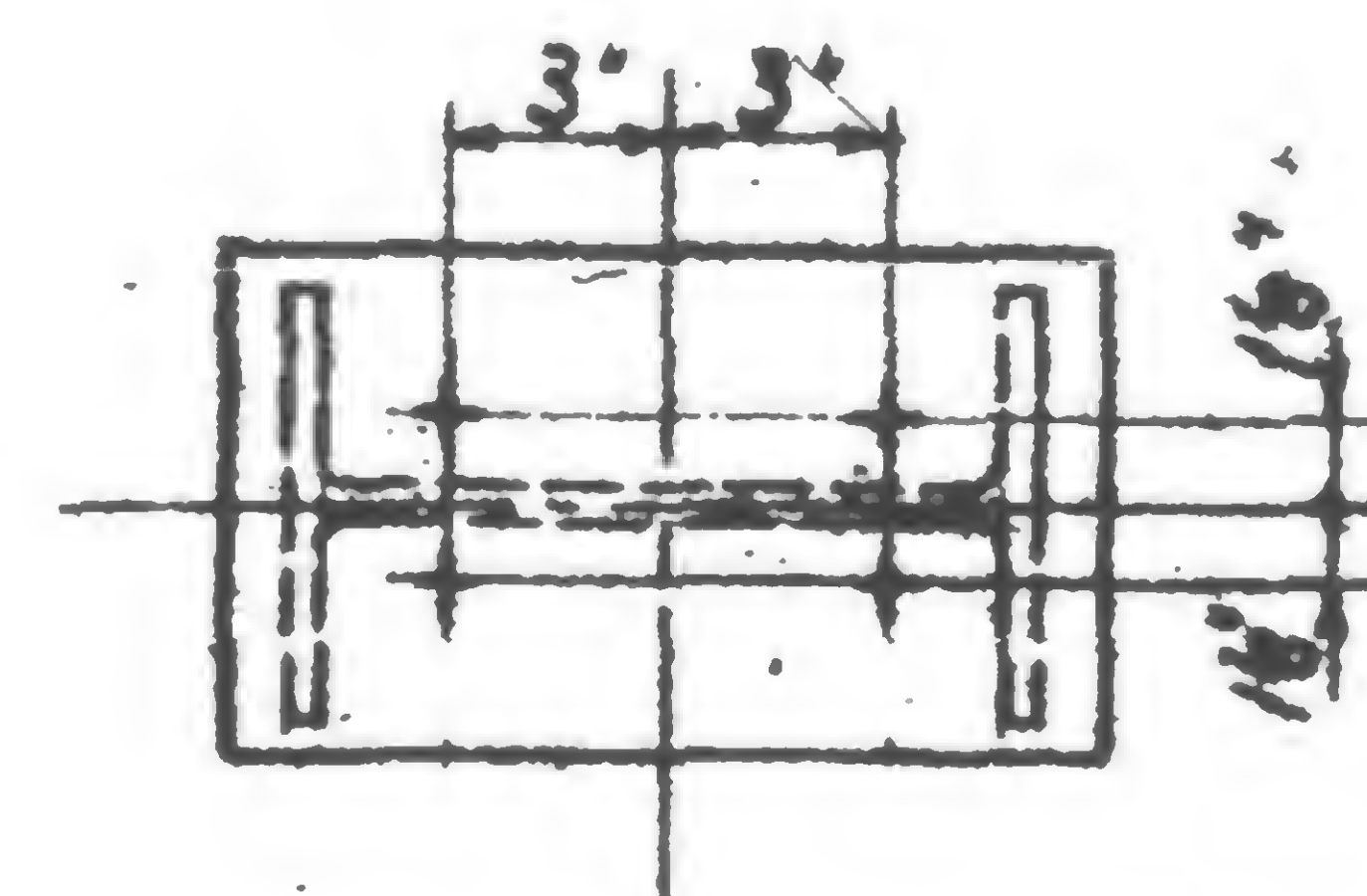
DETAIL A



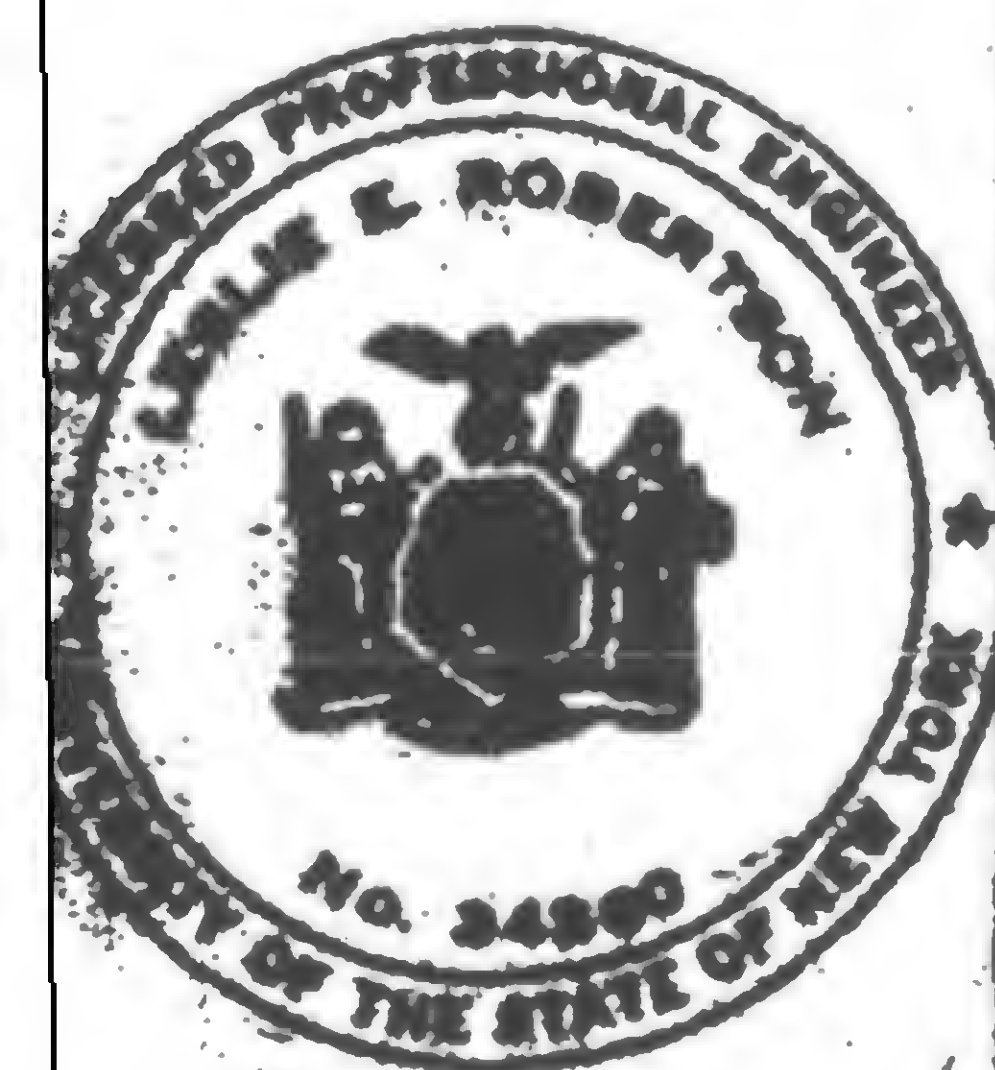
DETAIL B



DETAIL C1 &amp; C2



Plan of Top &amp; Bott. Plate

DRAWN  
E. Smith

REVISIONS

TRK-929-2





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

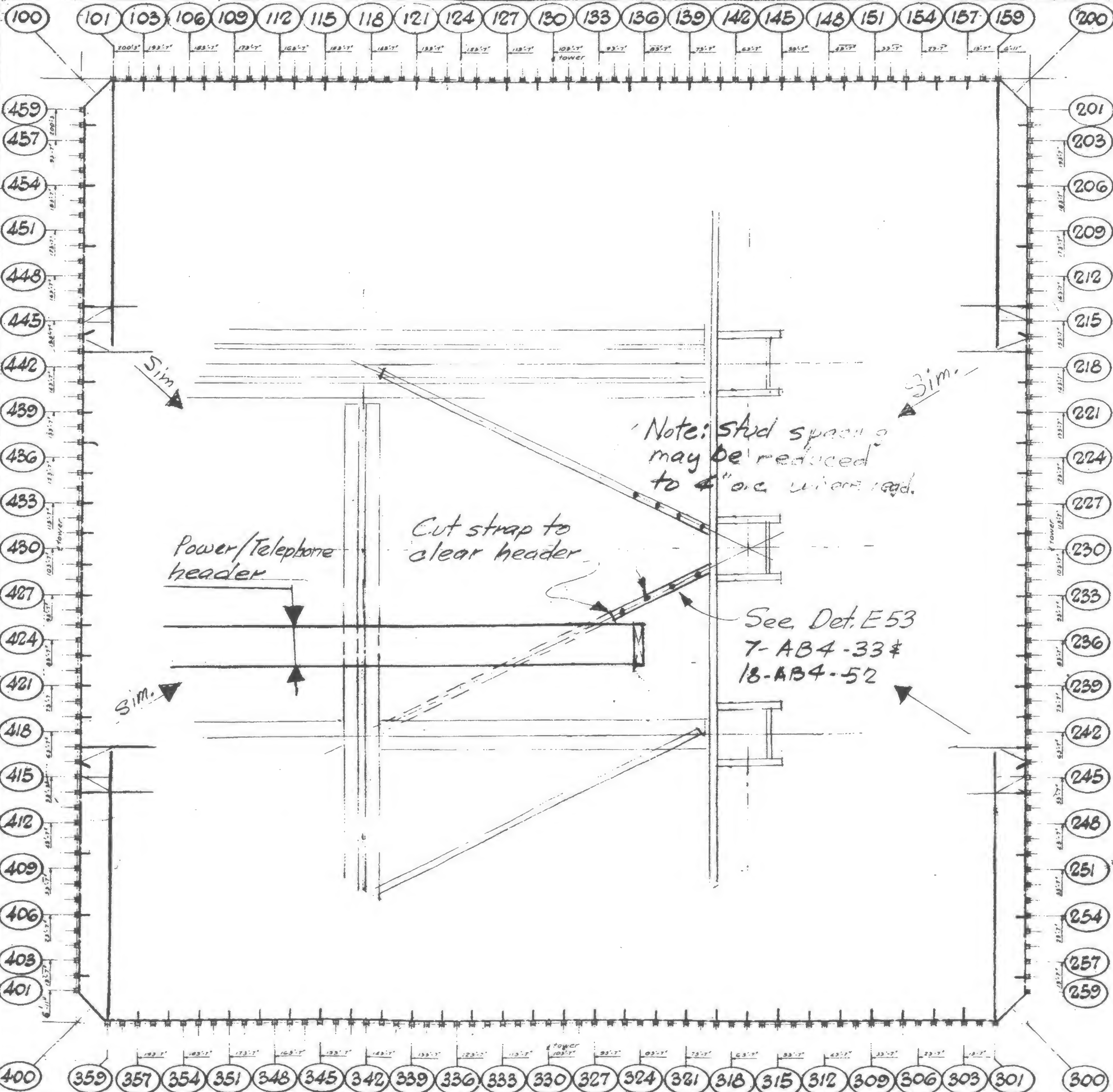
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

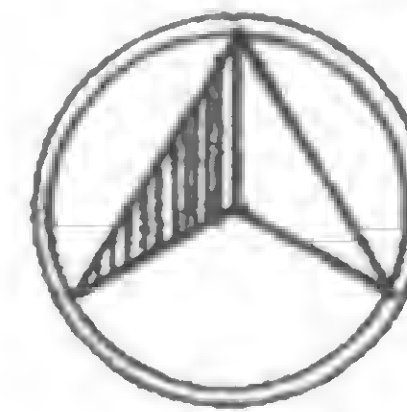
TITLE REVISED DETAIL E53 AT COL. 2K, 244, 4K, 444

DATE 6-10-69

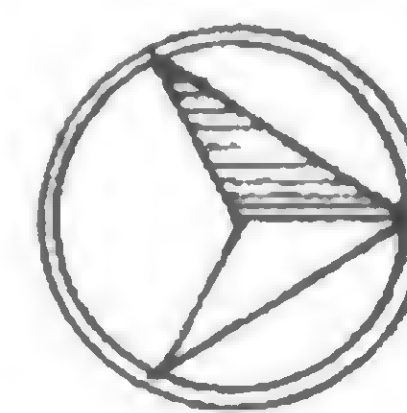
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

Detail applies to the following floors

Tower A	Tower B
10-40	12-40
44-74	44-74
78-106	78-106

DESIGNED

DRAWN

REVIEWED

19-AB-930



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

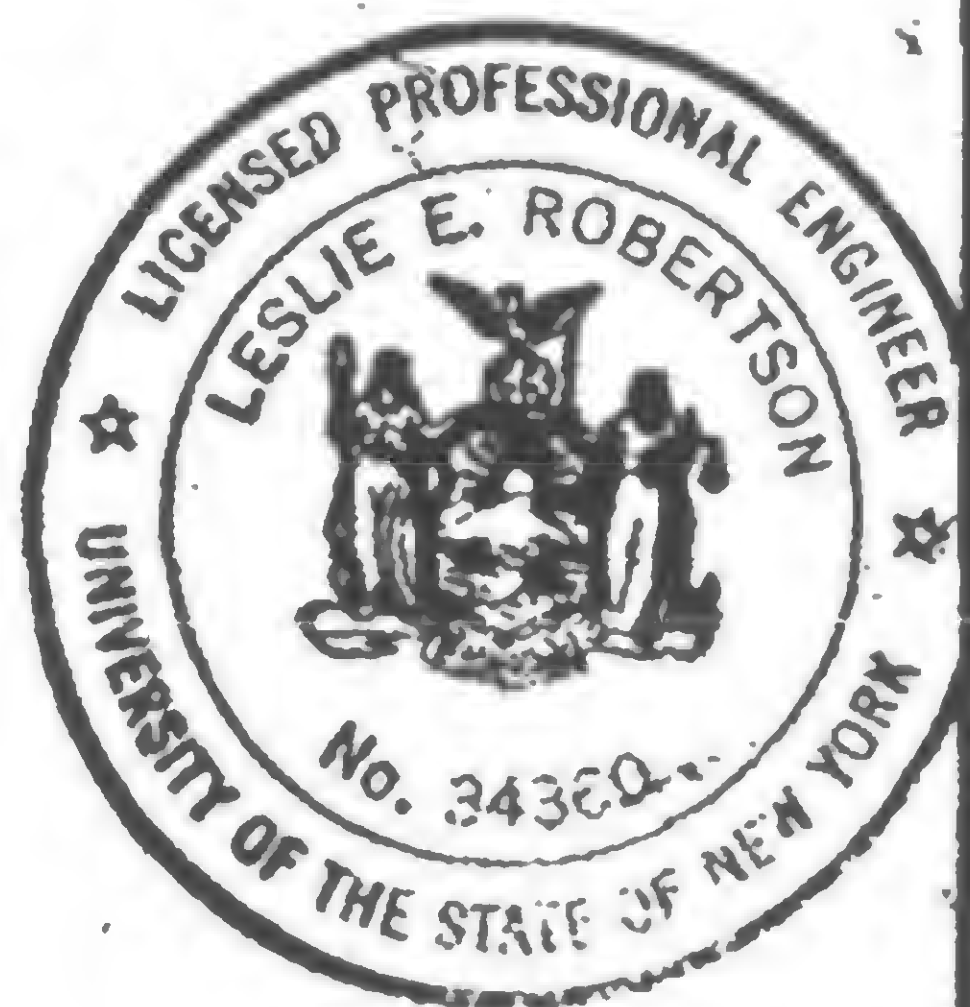
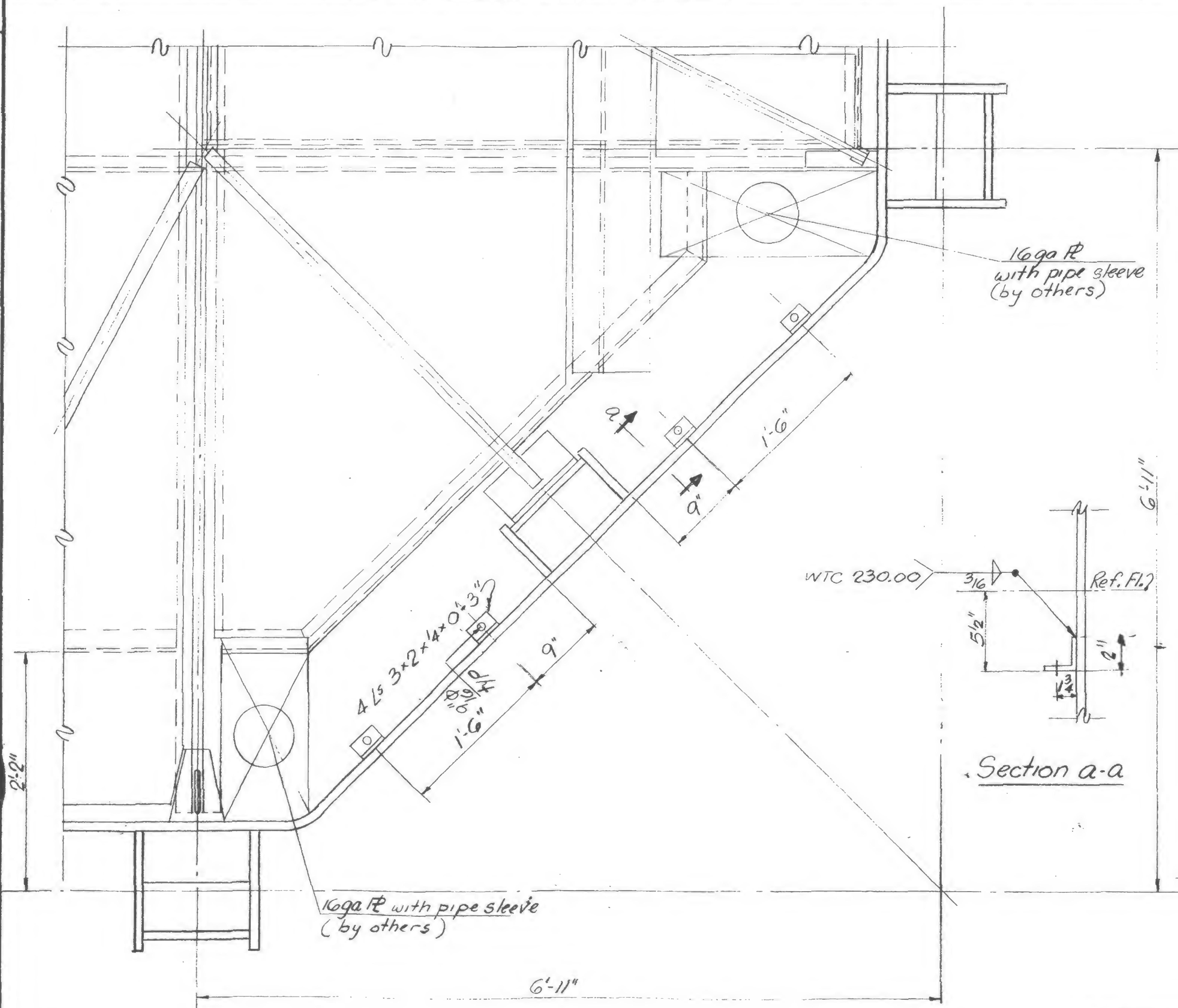
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE REVISION AFTER FABRICATION - DETAIL 931

DATE 6/10/69

REVISIONS



DESIGNED

DRAWN

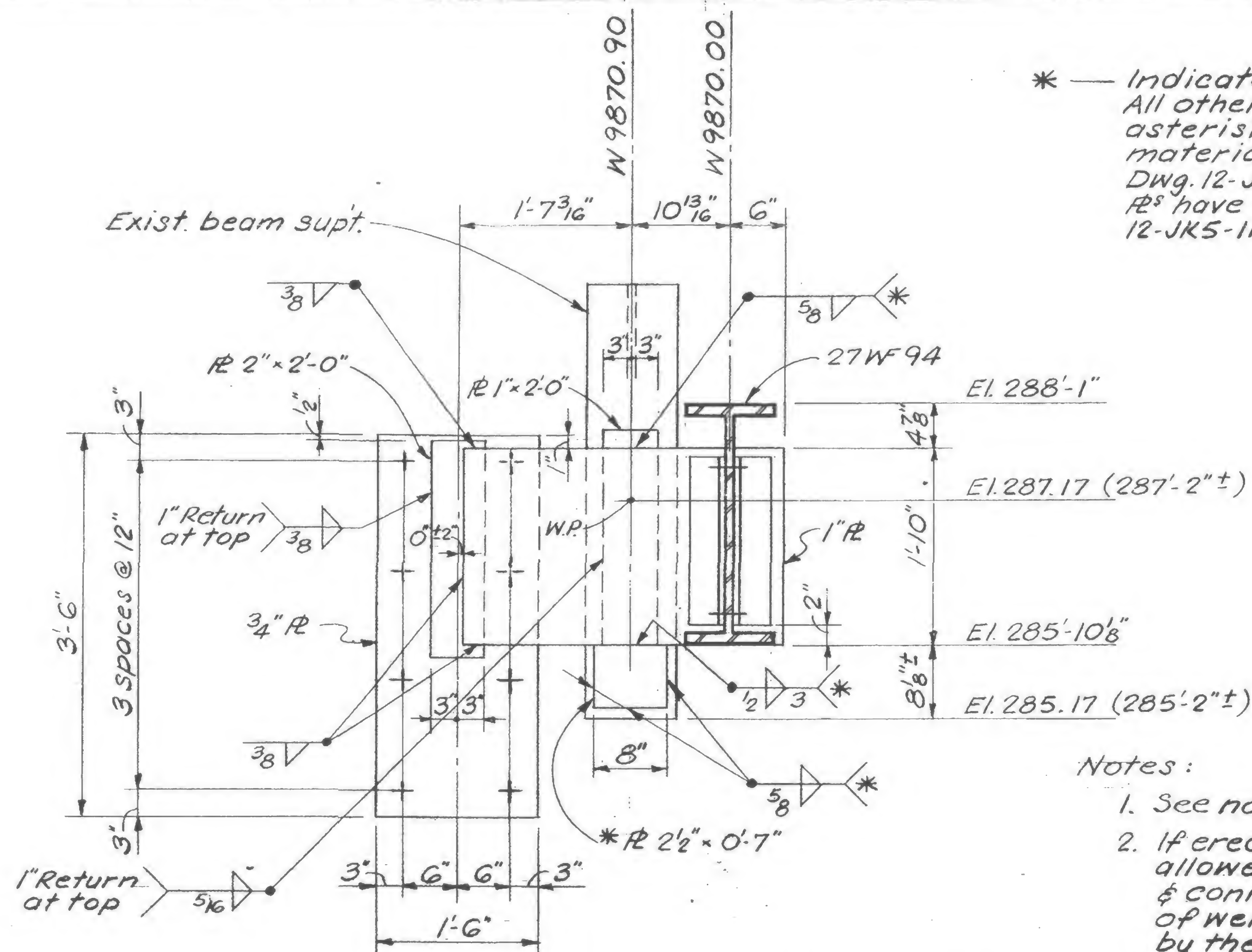
REVIEWED

19-AB-931



## REVISIONS

\* — Indicates new R and welds.  
All other items without  
asterisk, are existing  
materials as shown on  
Dwg. 12-JK5-11 (location of  
R's have been revised from  
12-JK5-11)

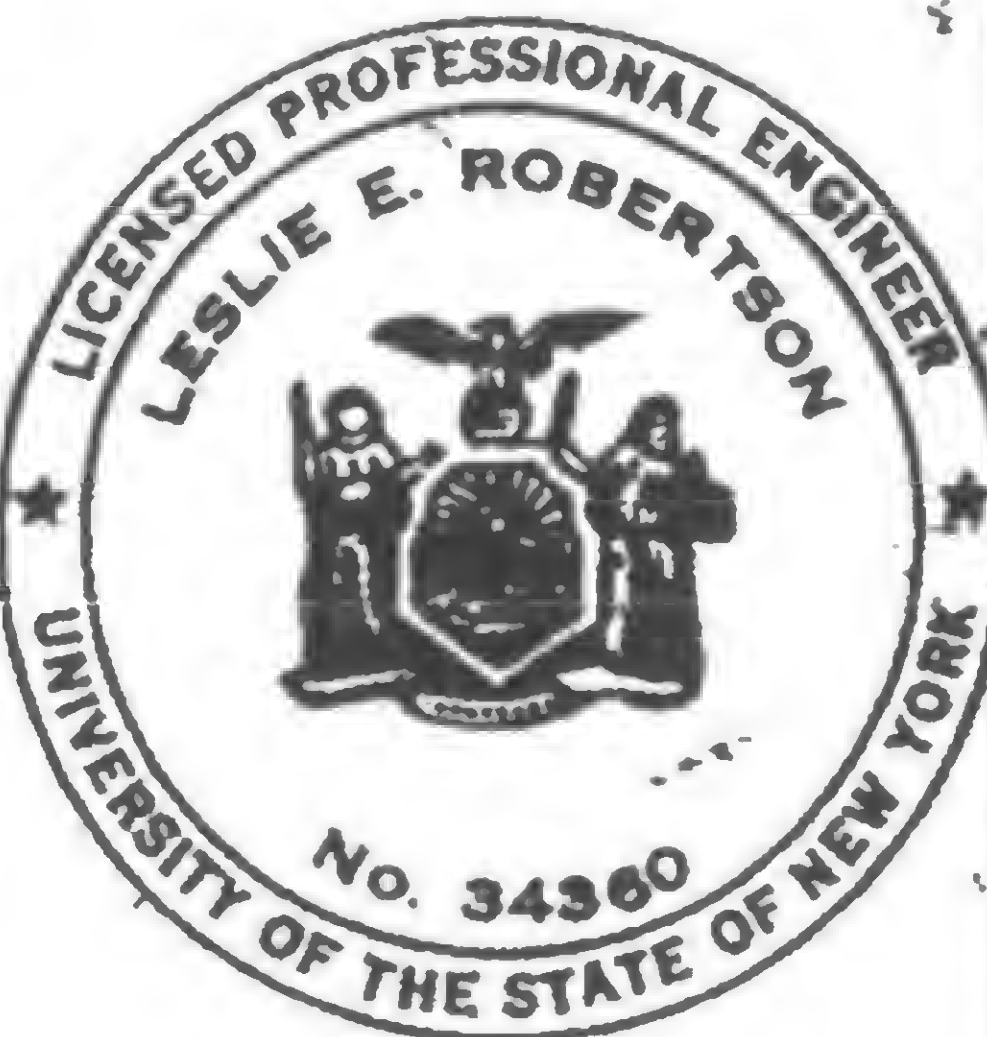
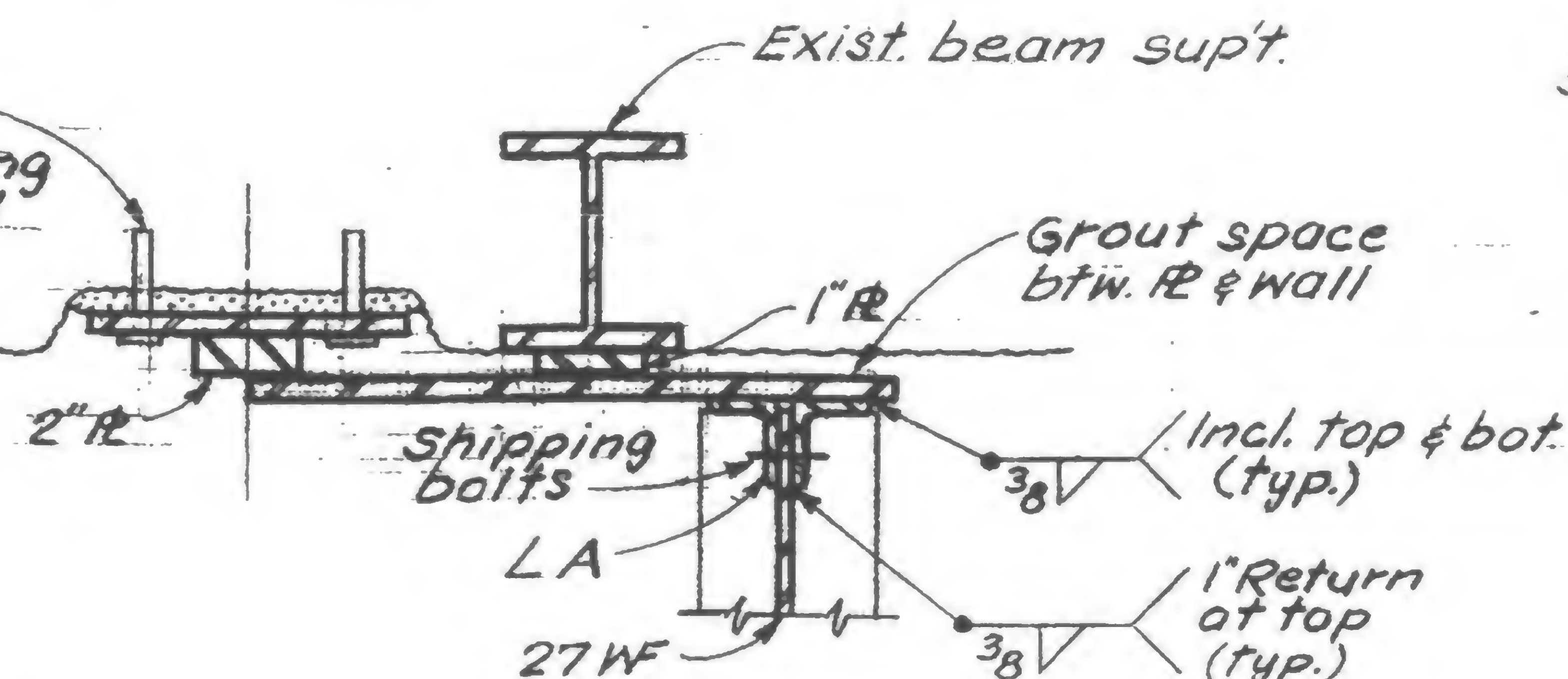


## Notes:

1. See notes on 12-JK5-1.
2. If erection clearance is allowed between beam web & connection angles, size of weld has to be increased by the dimension of this gap (max. clearance = '8").
3. Due to the deviation of exist. beam support, the weld size shown has to be increased by the dimensions of the gap between R and support. In no case should this gap be greater than '8".

Cinch anchors  
cutting & grouting  
similar to detail  
on 12-JK5-4

Face of  
Slurry wall



DESIGNED

DRAWN

S.C.

REVIEWED

E.L.

19-J-932





PROJECT THE WORLD TRADE CENTER

TITLE CONCRETE HOIST CATHEAD SUPPORTS

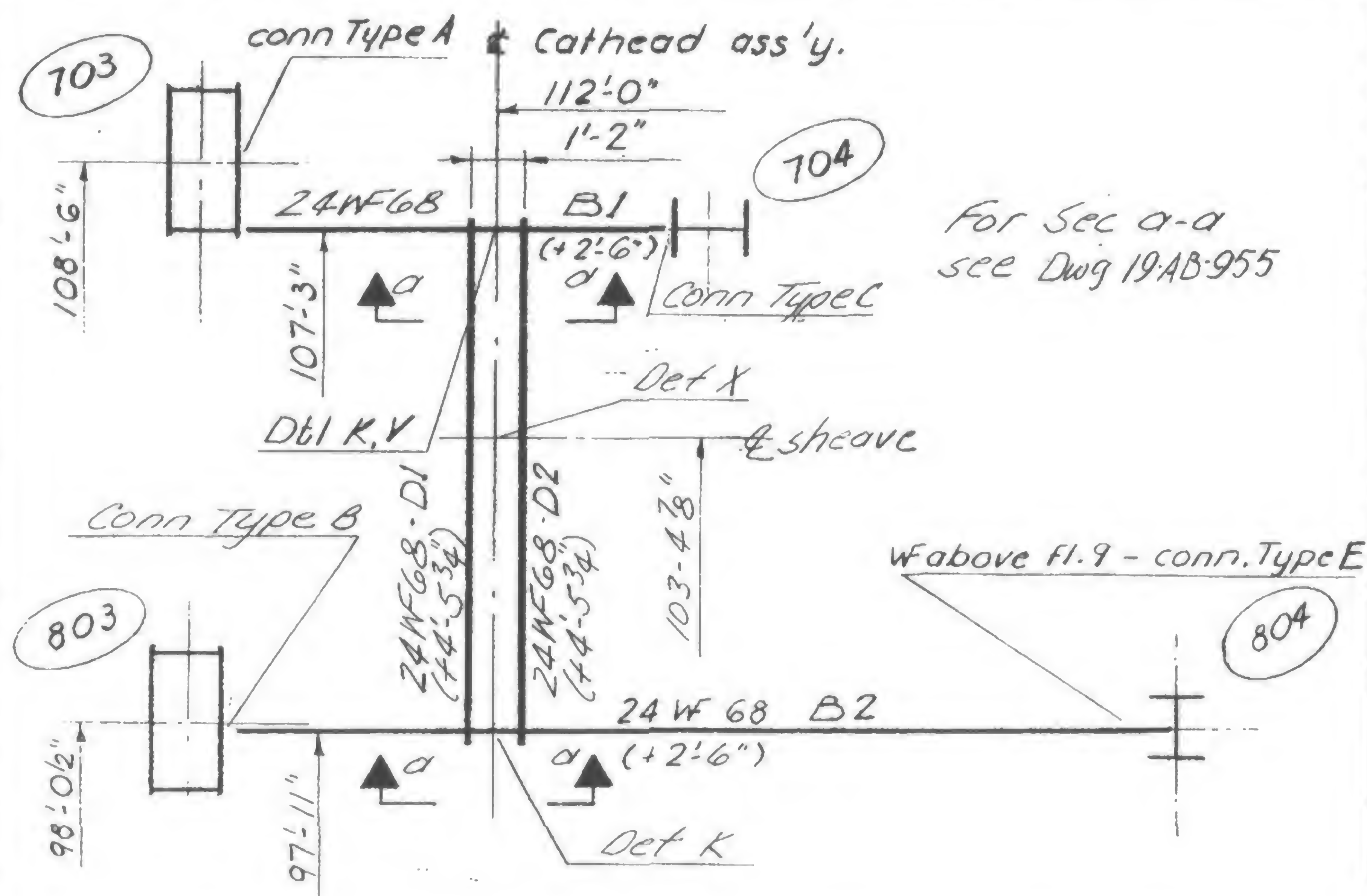
DATE 5-12-69

## REVISIONS

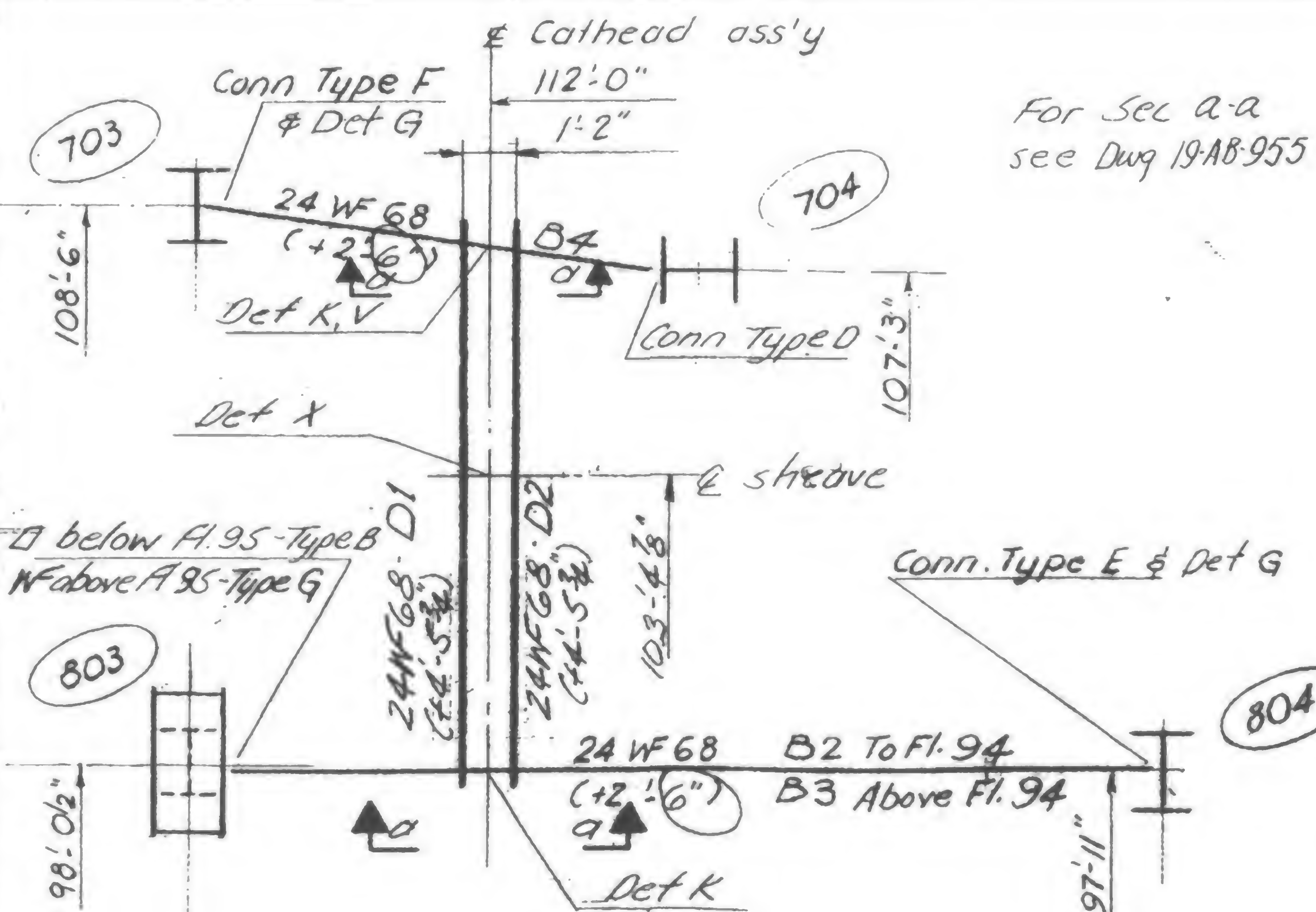
5-21-69

8-11-69

12-7-70



PLAN - FRAMING FLOOR 75 &amp; BELOW



PLAN - FRAMING ABOVE FLOOR 75 to 105

## Notes:

1. Beams and column connections shall be provided as shown at locations given in Schedule, 19-AB-954.
2. Beams shall be re-used at all support levels, as shown in schematic elevation, 19-AB-952, and Schedule, 19-AB-954 & 19-AB-951.2.
3. Where the beam length increases above Fl. 75 and 95, the same basic support beam may be extended as shown in Detail (G). A single set of 2-18 E members may be used for each beam, with bolt hole patterns corresponding to each extension length required.
4. Provide slotted holes as shown in Schedule and Details, 19-AB-954 & 955.
5. All vertical welds at column connections shall be returned  $\frac{3}{4}$ " at top.
6. All bolts shall be ASTM A325, friction type, fully tensioned at each level.
7. Connections at box column faces, WF column flanges and web connections projecting beyond the column flanges shall be removed immediately after the support is no longer needed. Removal of connections may be performed by cutting "T" or angles at the toe of the fillet of the outstanding leg, or by cutting the connection weld. Any cutting or gouging of permanent members shall be repaired by filling with weld metal and grinding smooth.
8. For conn. dtls, see Dwg 19-AB-951, 954, 955, 956.



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F. Smith

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19-AB-951 (1)

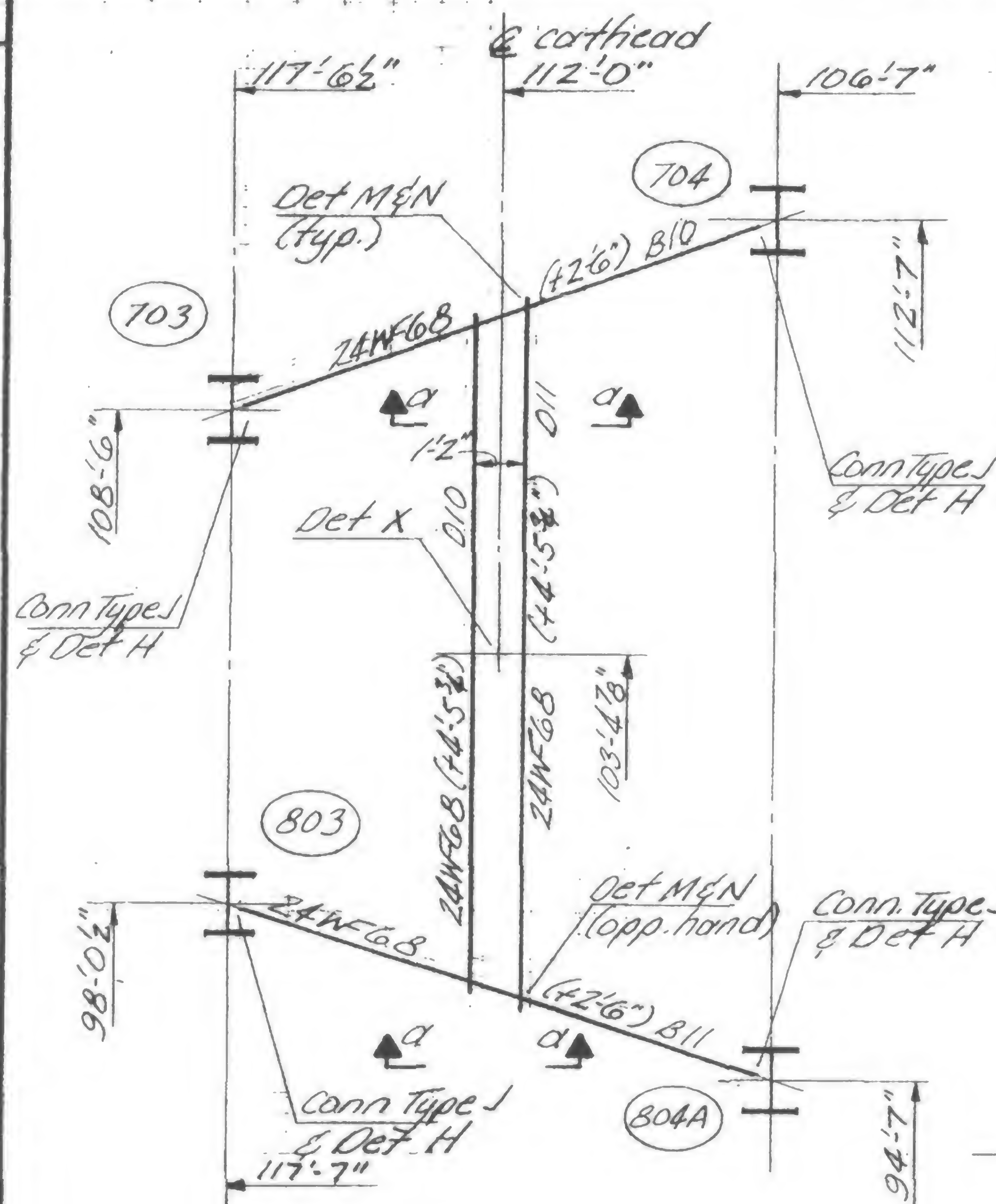


PROJECT THE WORLD TRADE CENTER

TITLE CONCRETE HOIST CATHEAD SUPPORTS

DATE 12-7-70

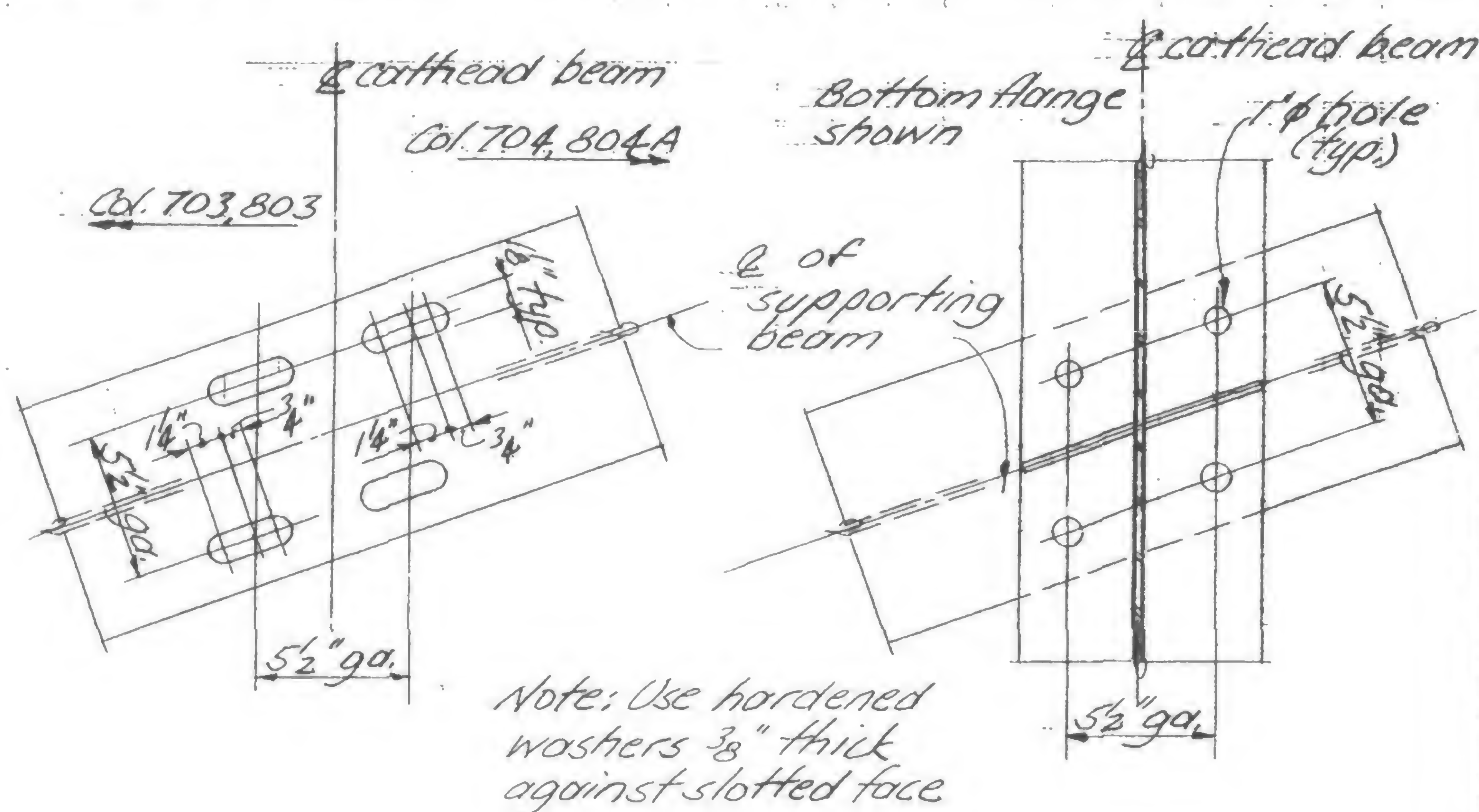
REVISIONS



Plan-Framing Fl. 107 to 109

Note:

1. For schematic elevations of cathead support system see Dwg. 19-AB-952
2. For Section a-a see Dwg. 19-AB-955
3. For column connection schedule below Floor 105 see Dwg. 19-AB-954



Detail M

Slotted holes in top flange of supporting beam at cathead connection

Detail N

Connection holes in cathead beams between cols 703 &amp; 704

COLUMN CONNECTION SCHEDULE

Col.	Location		Type *	e (in)	Bolts		Connection		Remarks
	Floor Tower A	Floor Tower B			Size	N	L	Weld (1)	
703	107, 109	107, 109	J	6"	3/4" φ	6	1'-5 1/2"	5/16"	A
704	107, 109	107, 109	J	6"	3/4" φ	6	1'-5 1/2"	5/16"	
803	107, 109	107, 109	J	6"	3/4" φ	6	1'-5 1/2"	5/16"	A
804	107, 109	107, 109	J	6"	3/4" φ	6	1'-5 1/2"	5/16"	

\* Use W=6" at Det. H for both Type C &amp; J

Remark A All bolt holes at this end shall be slotted.



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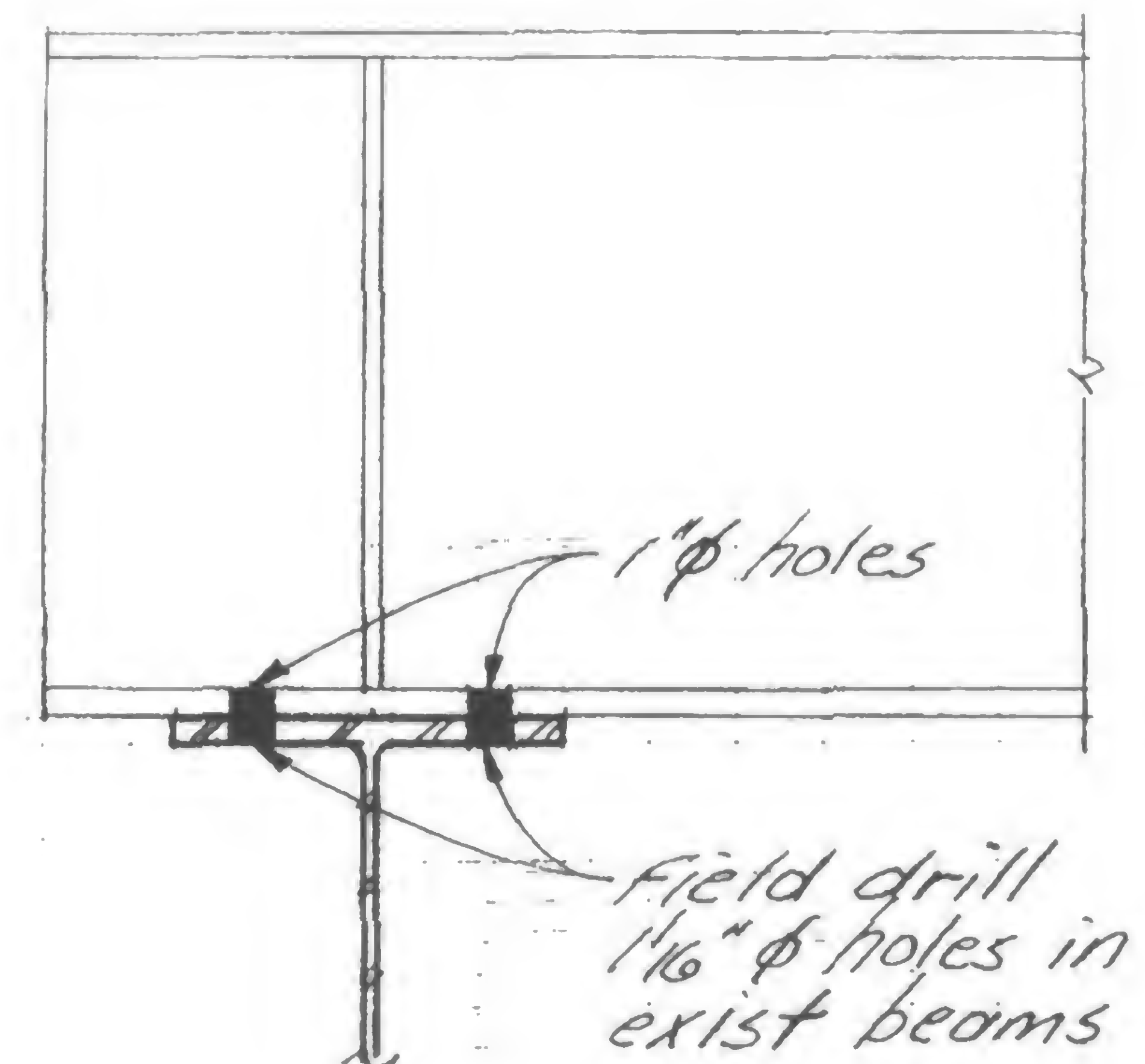
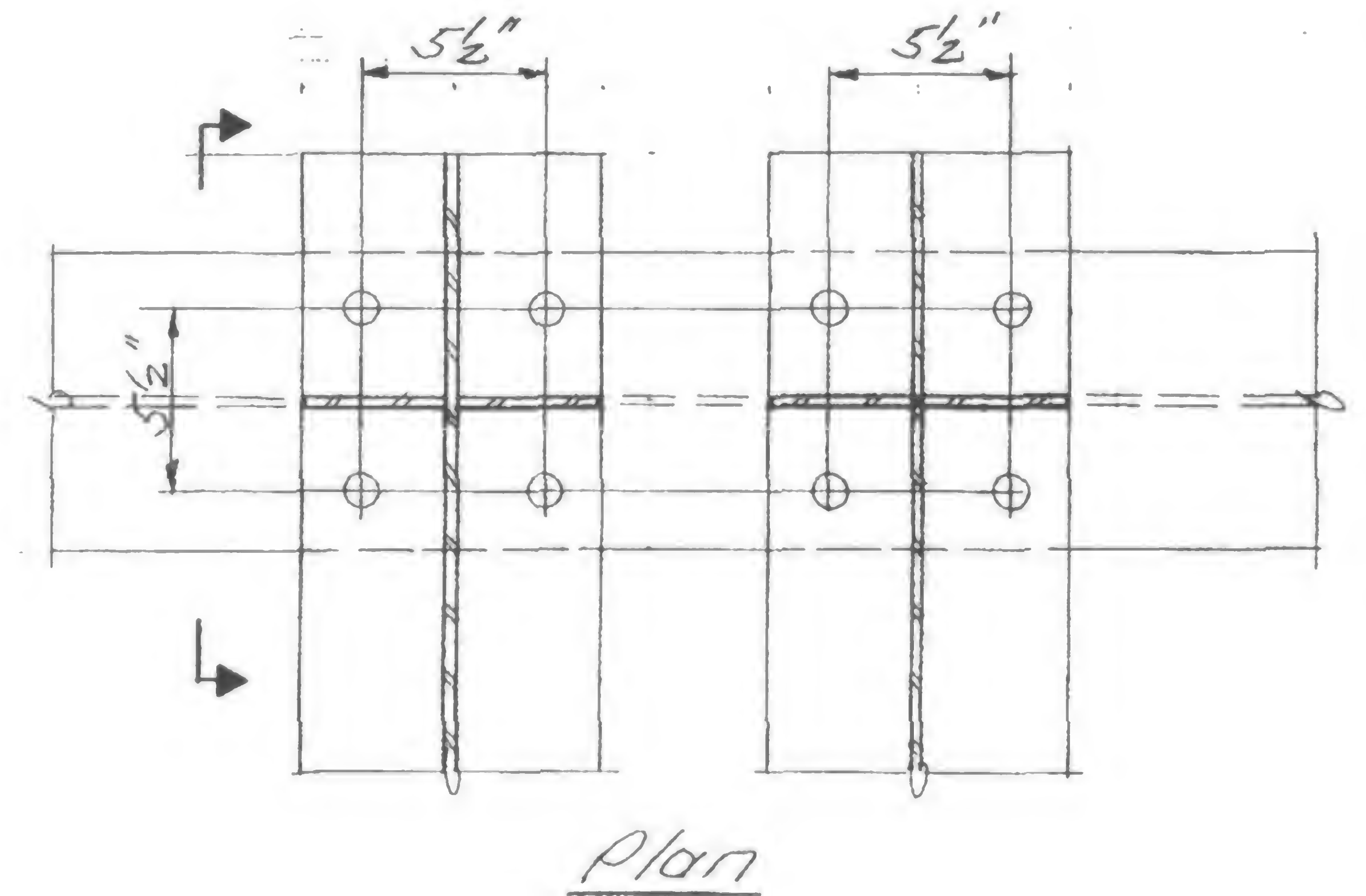
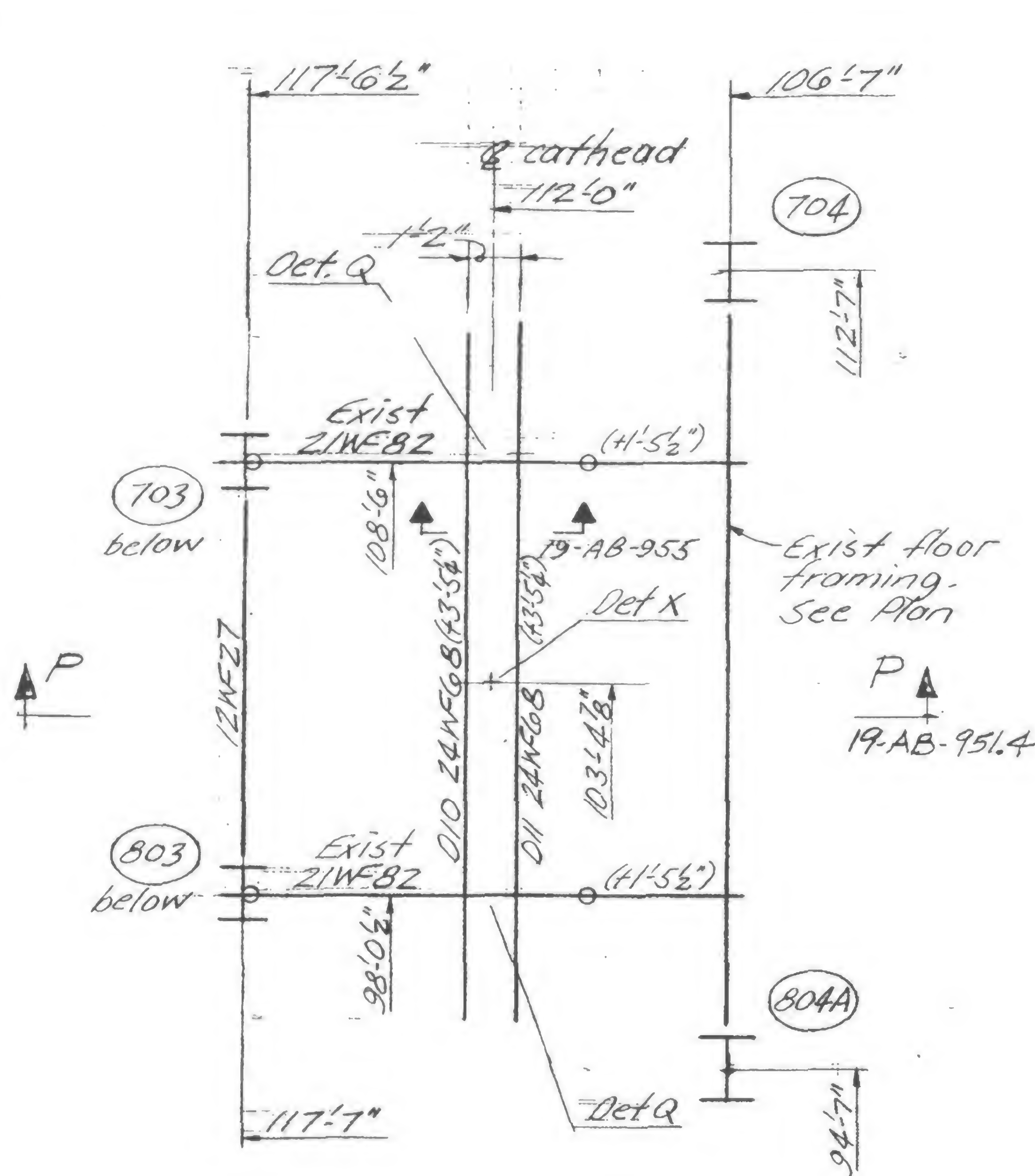
DRAWN

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19-AB-951.2



REVISIONS



Framing Plan at Floor 110

See Dwg. No. 19-AB-951.1 for notes.



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DRAWN

J. Adams

REVIEWED

19-AB-951.3



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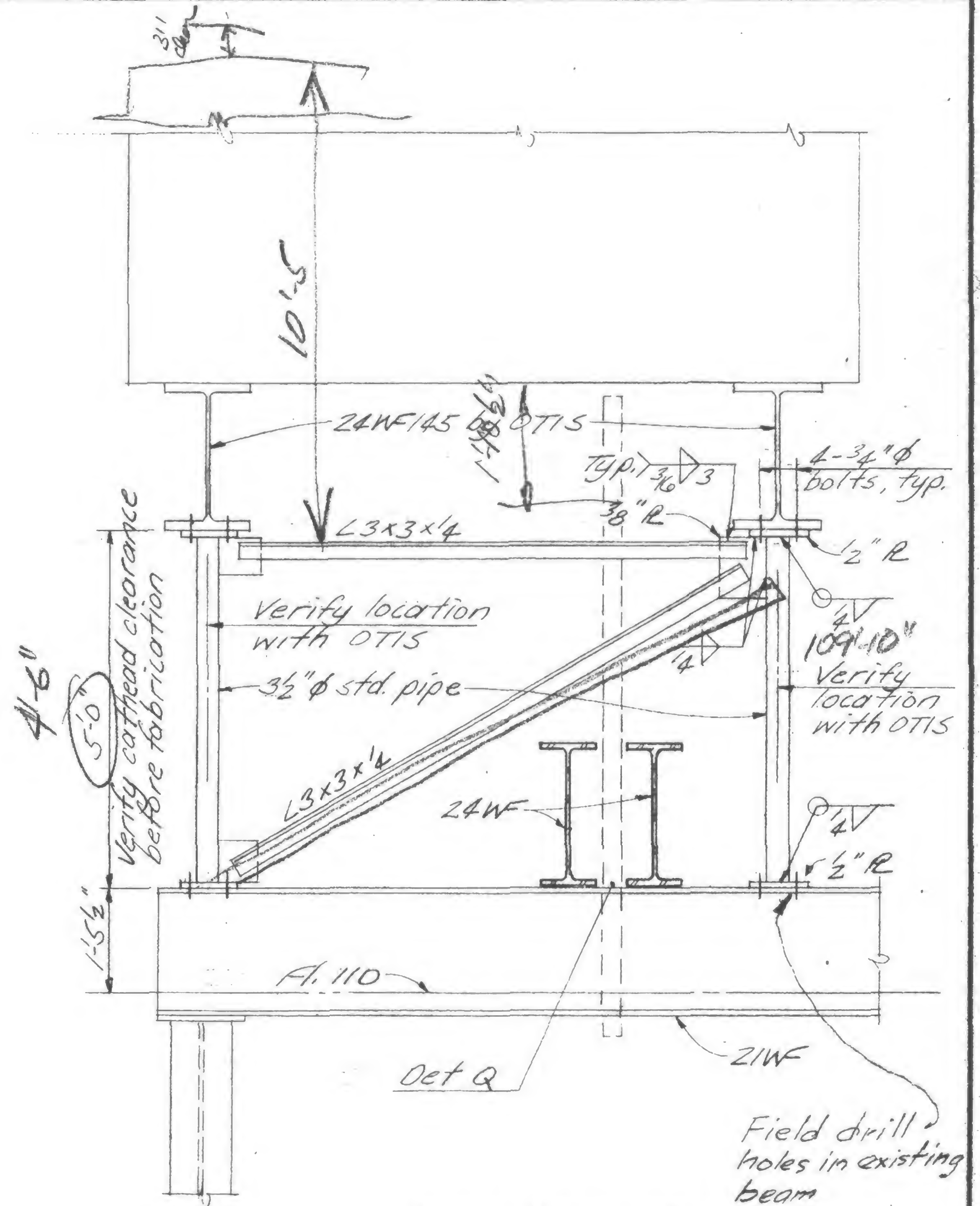
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TITLE CONCRETE HOIST CATHEAD SUPPORT

DATE 12/7/70

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Section P-P



NED

DRAWN  
P. Rehi  
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19-AB-951.4



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Structural &amp; Civil Engineers

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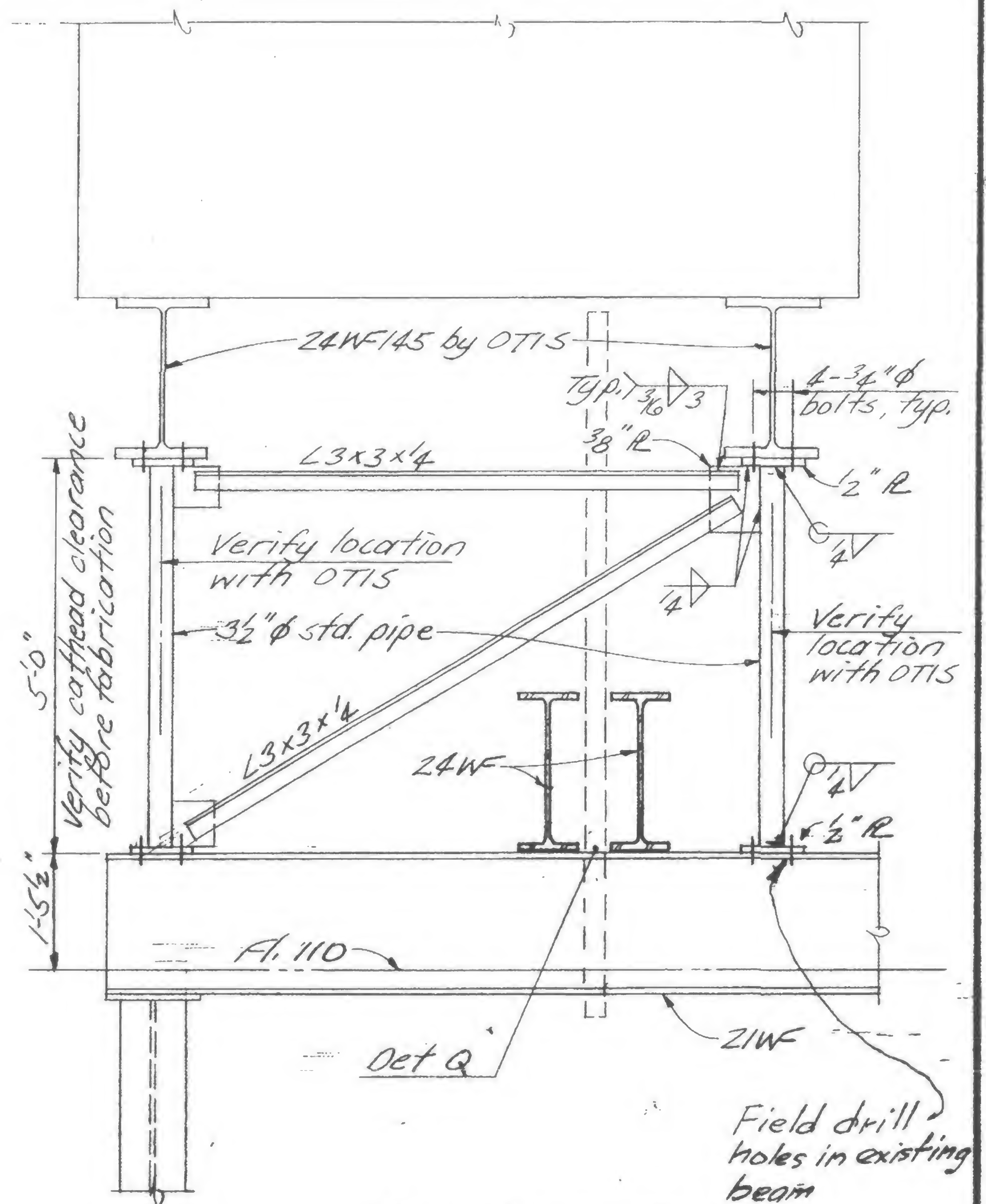
TITLE

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DATE

12/7/70

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P. A. A. A.

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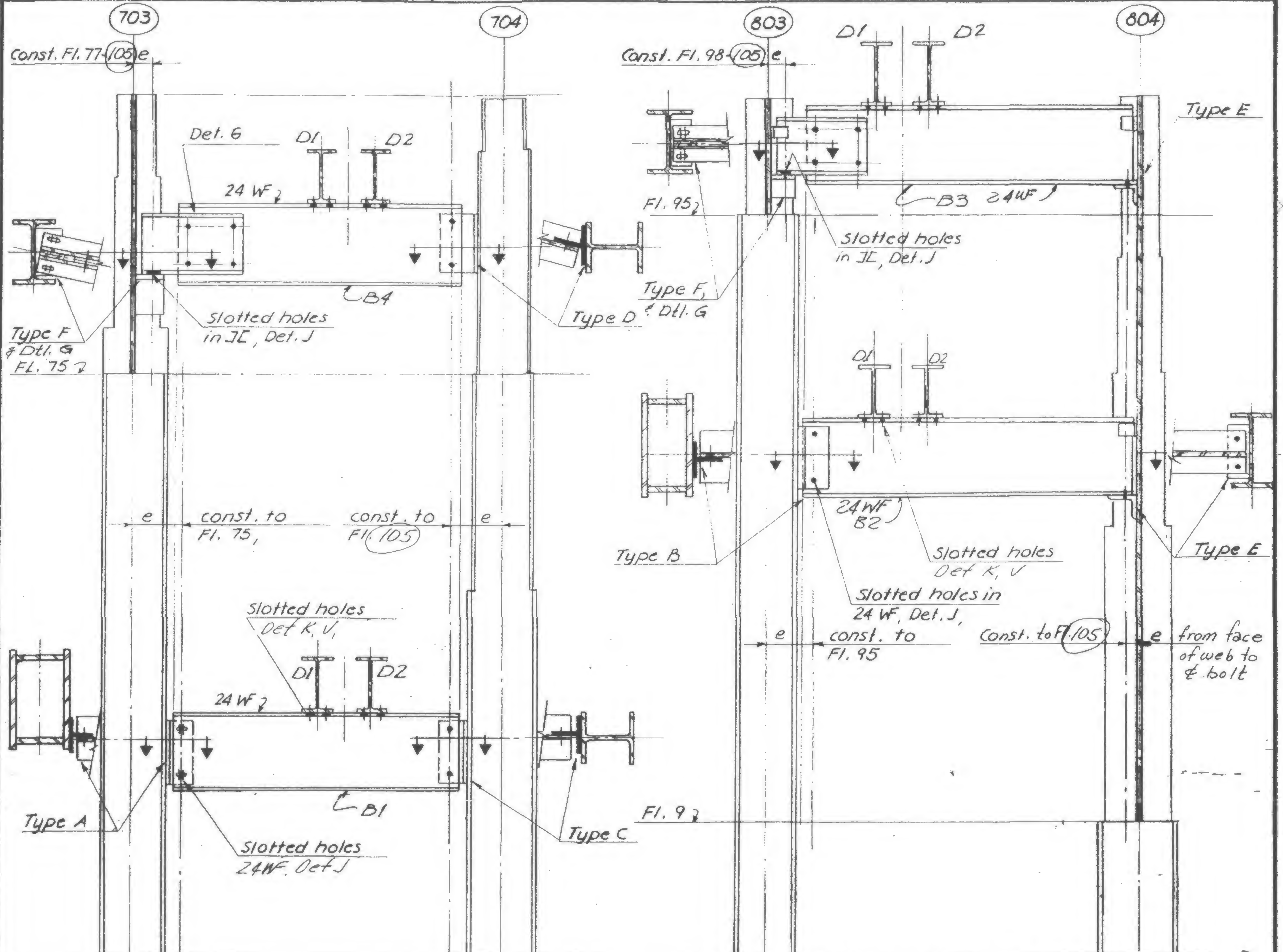
Structural &amp; Civil Engineers

PROJECT **THE WORLD TRADE CENTER**TITLE **CONCRETE HOIST CATHEAD SUPPORTS**DATE **5-12-69**

## REVISIONS.

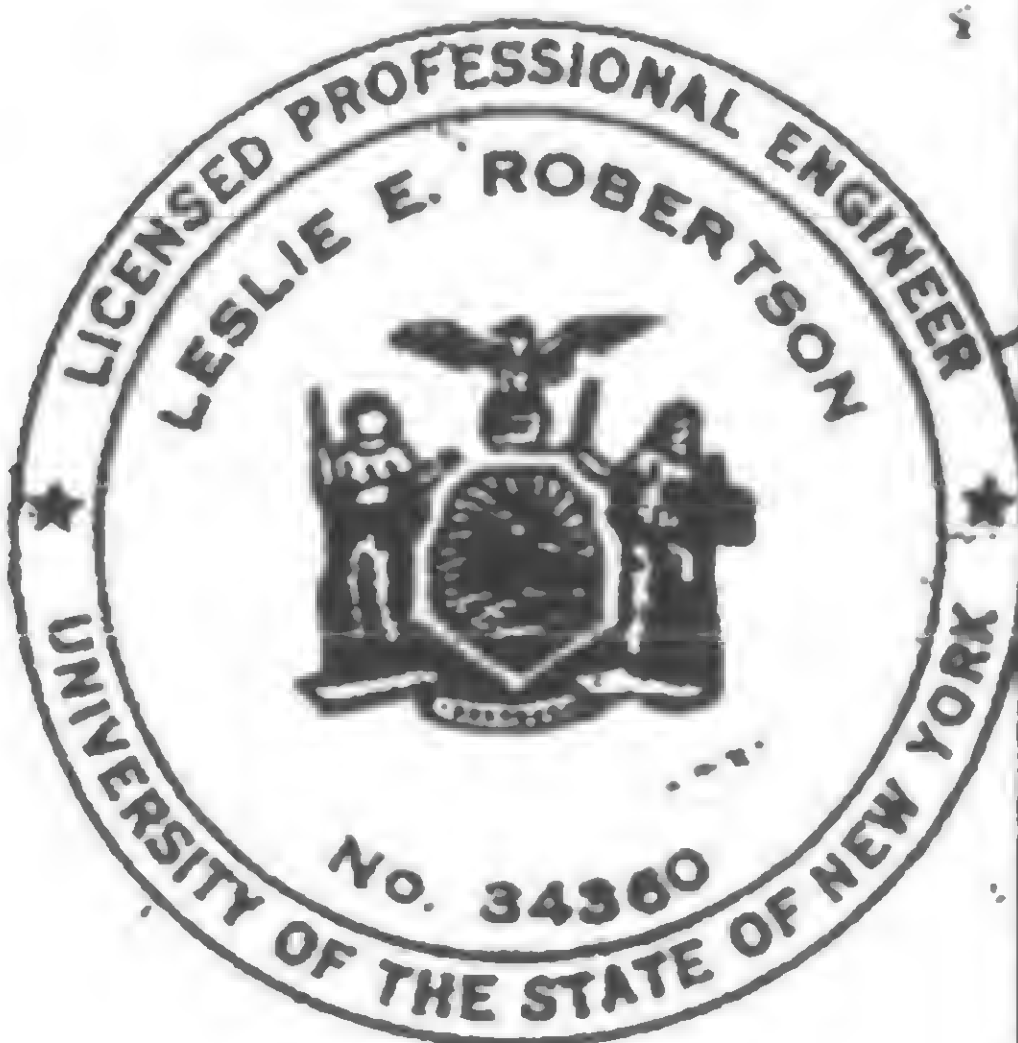
8-11-69

12-7-70

SCHEMATIC ELEVATIONS  
CATHEAD SUPPORT SYSTEM

Note. For conn. dtls, see Dwg 19-AB-953 & 954  
For conn. locations, see Dwg 19-AB-954

19-AB-952



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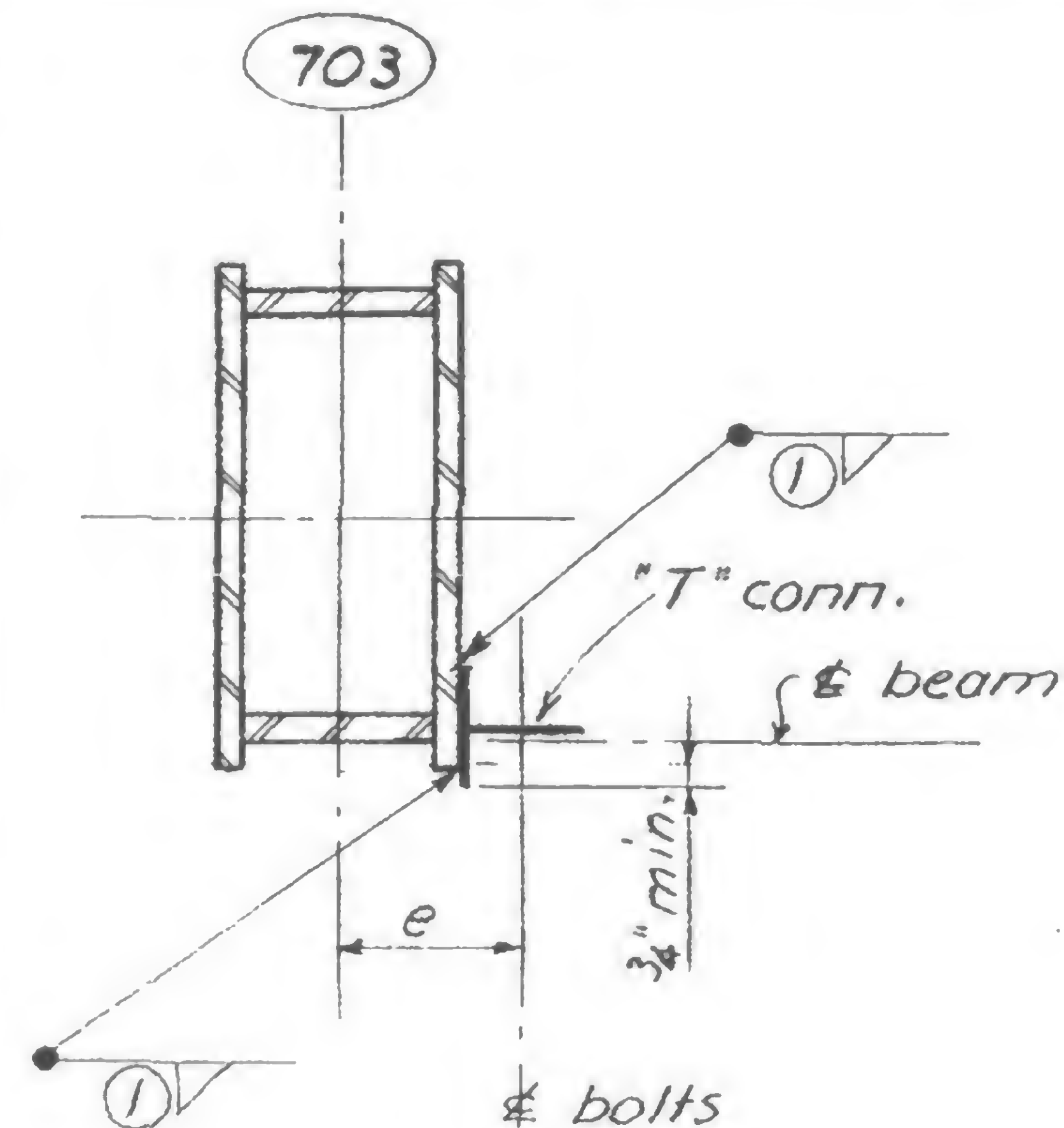
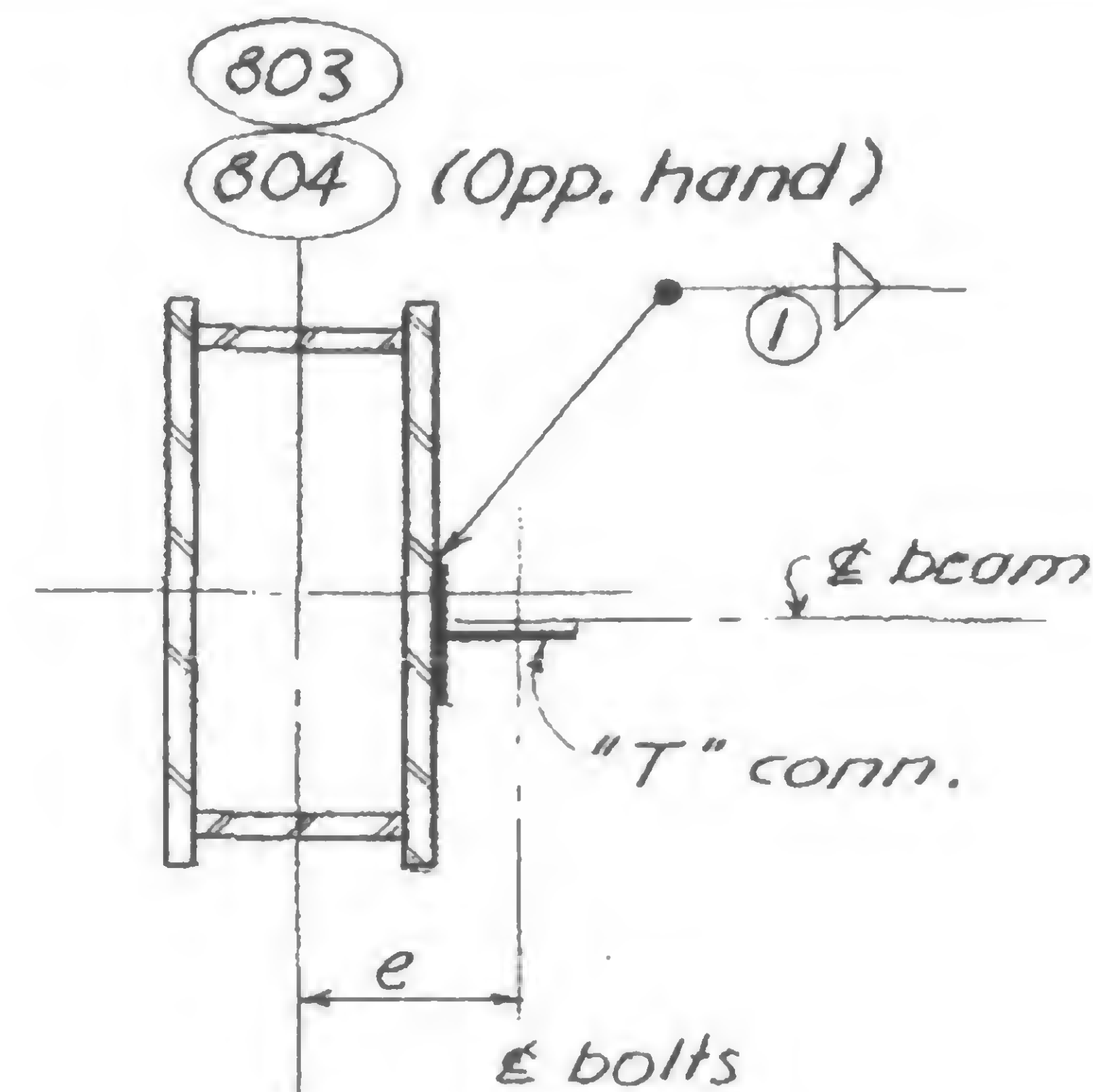
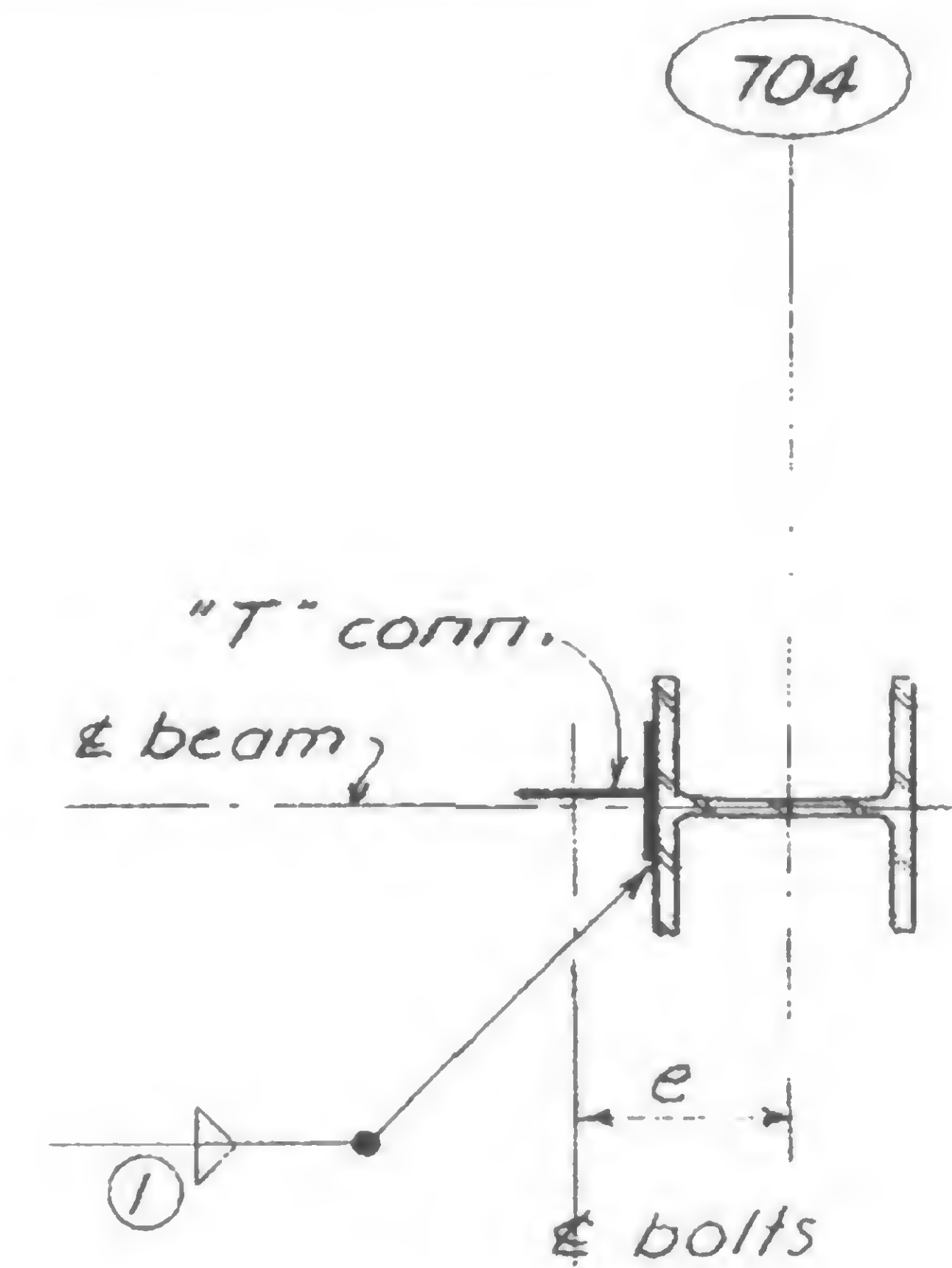
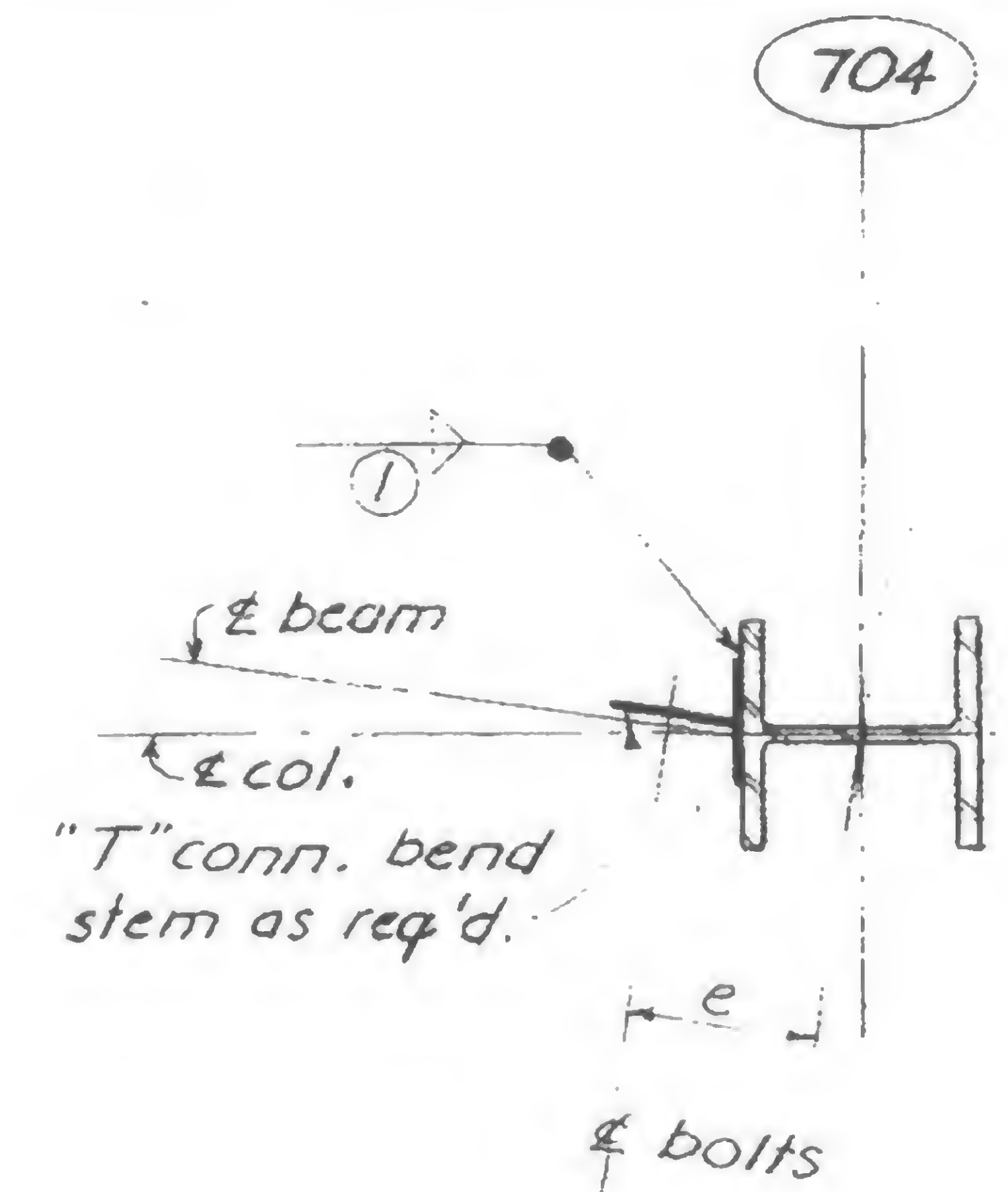
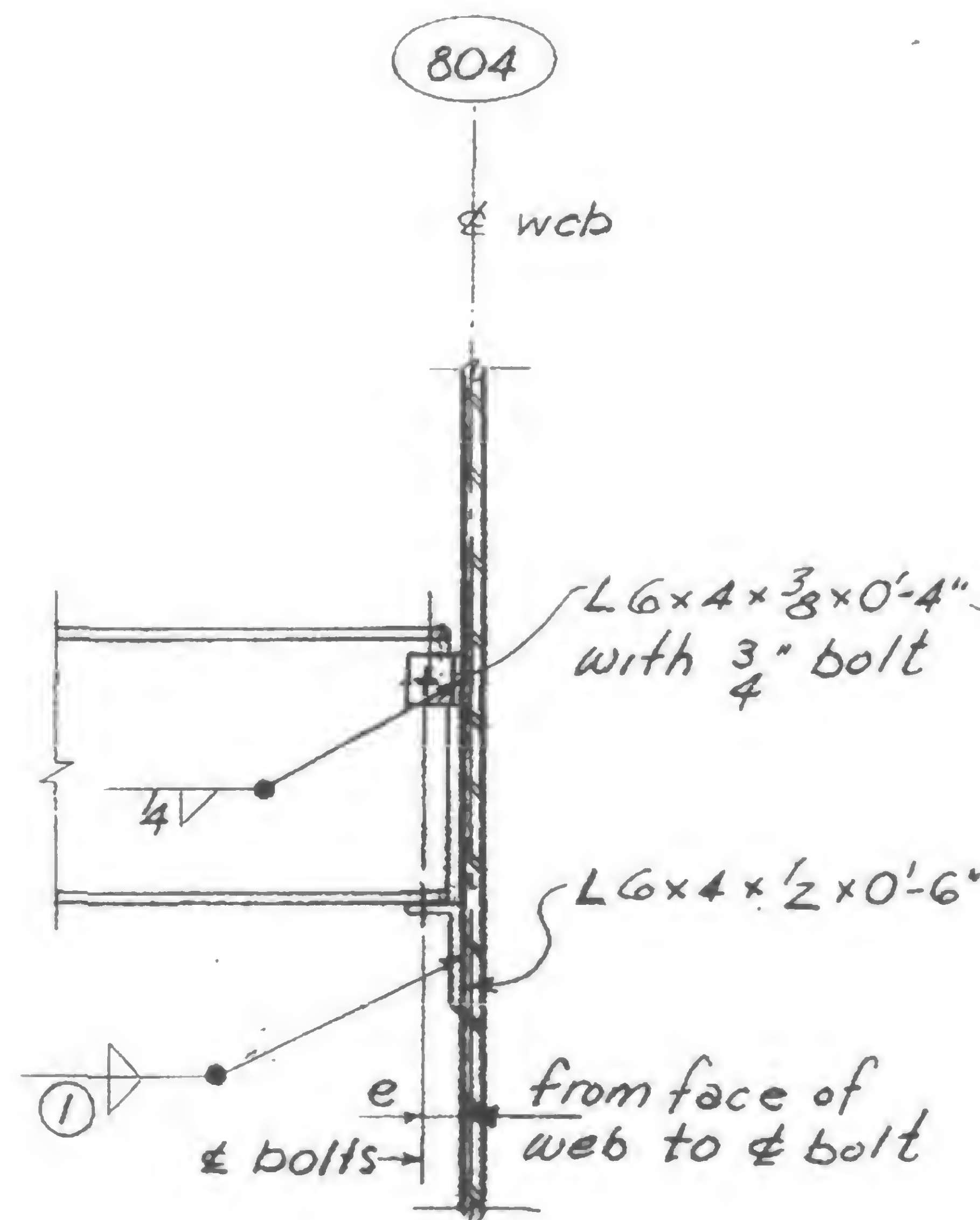
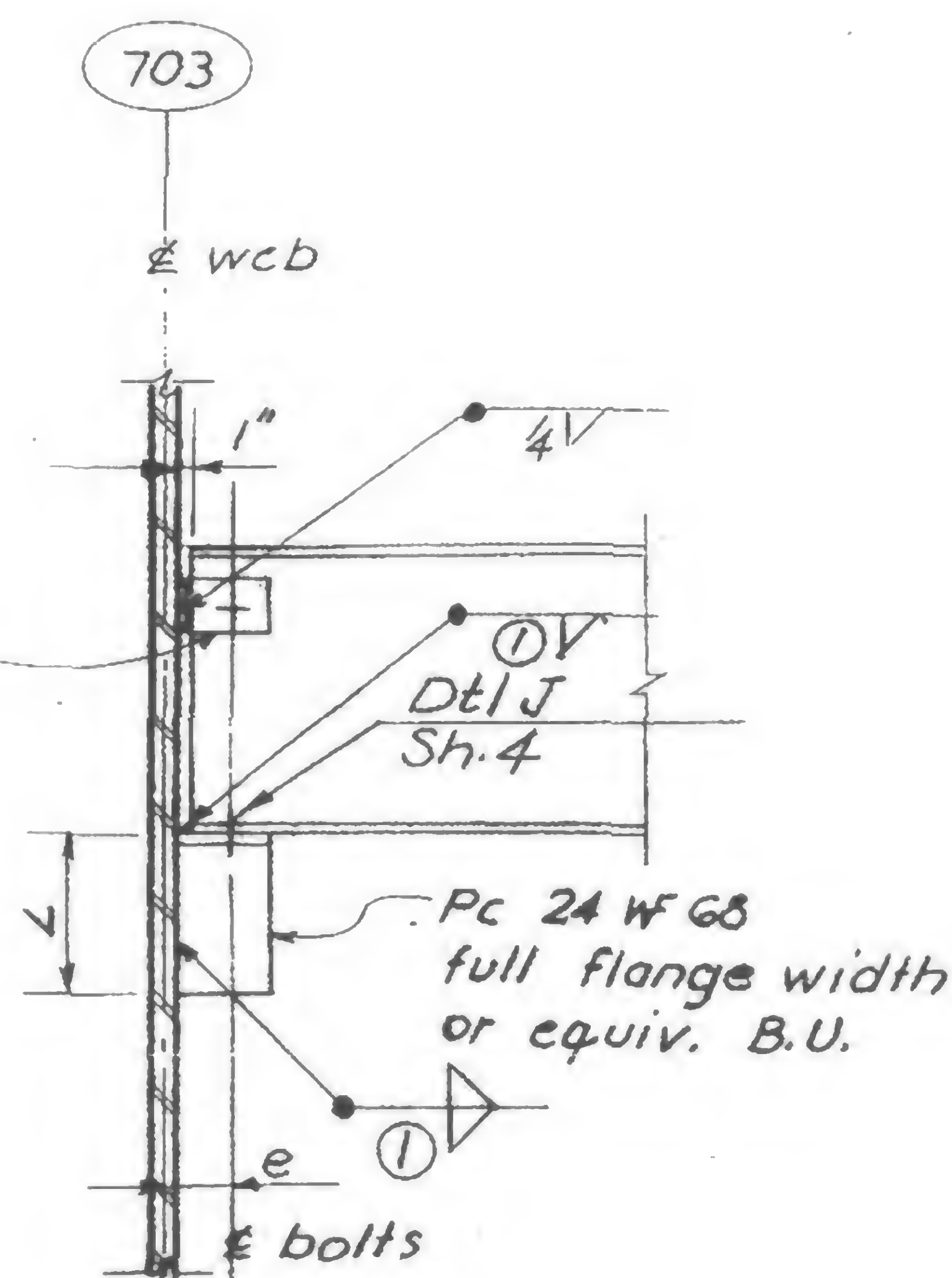
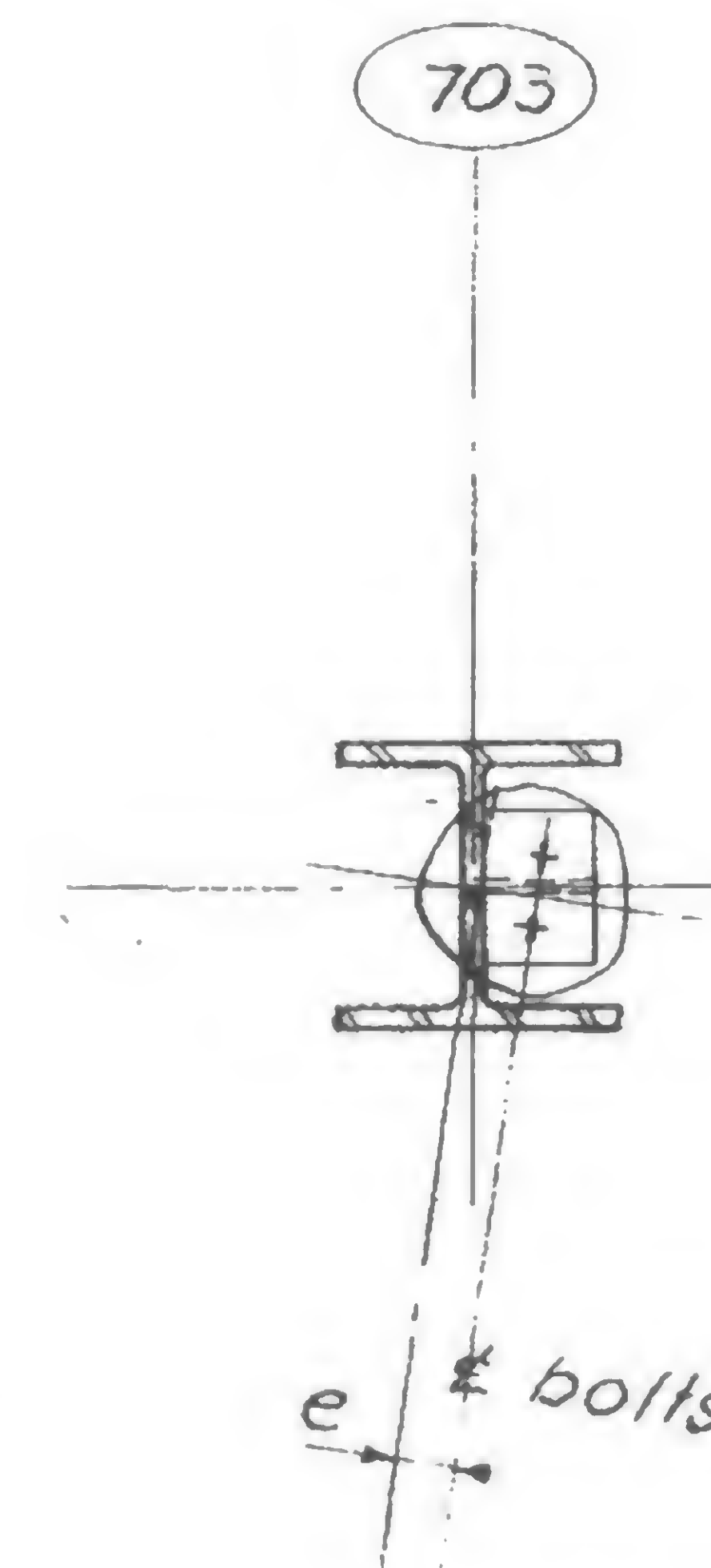
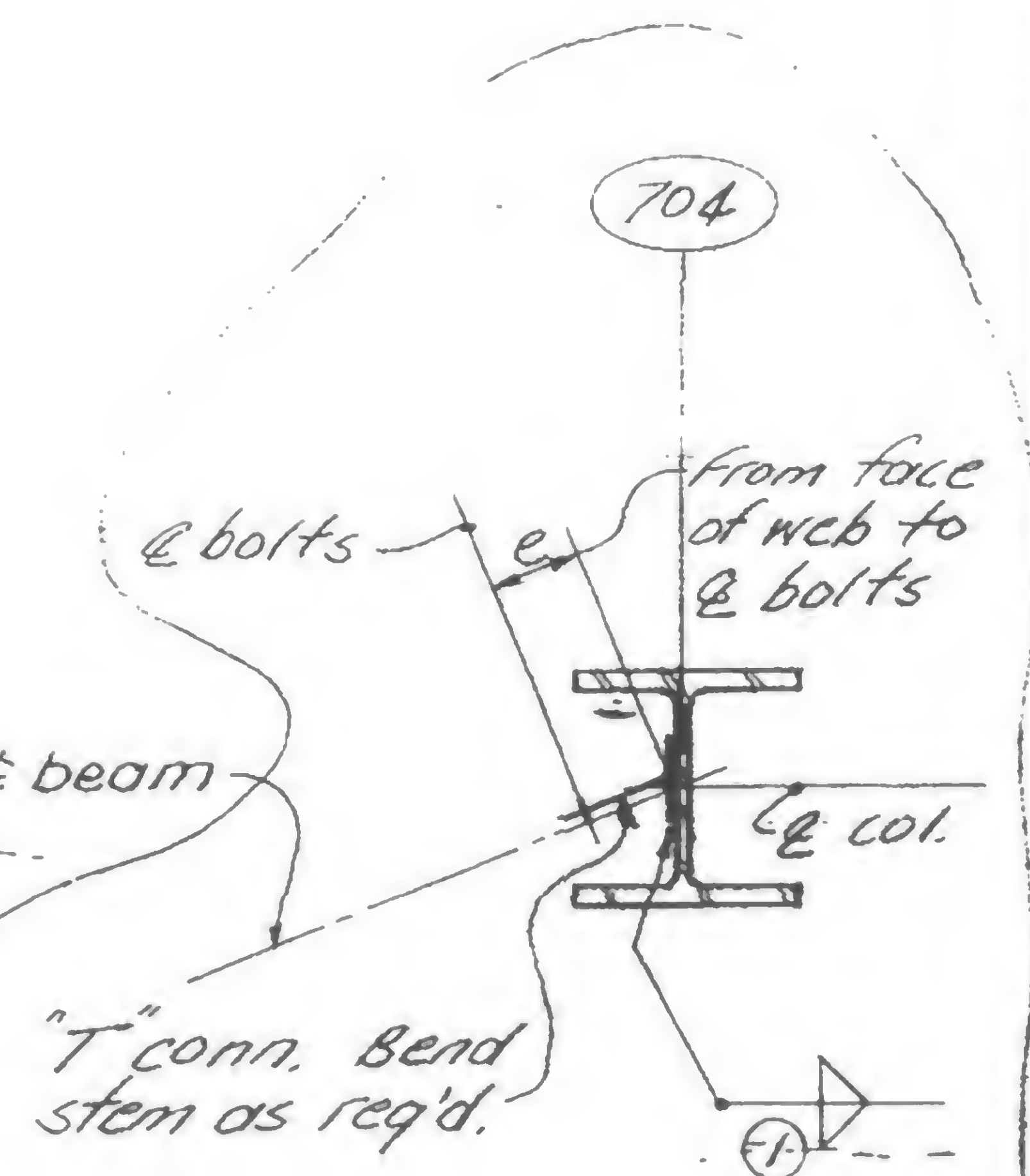




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8-11-69

12-7-70

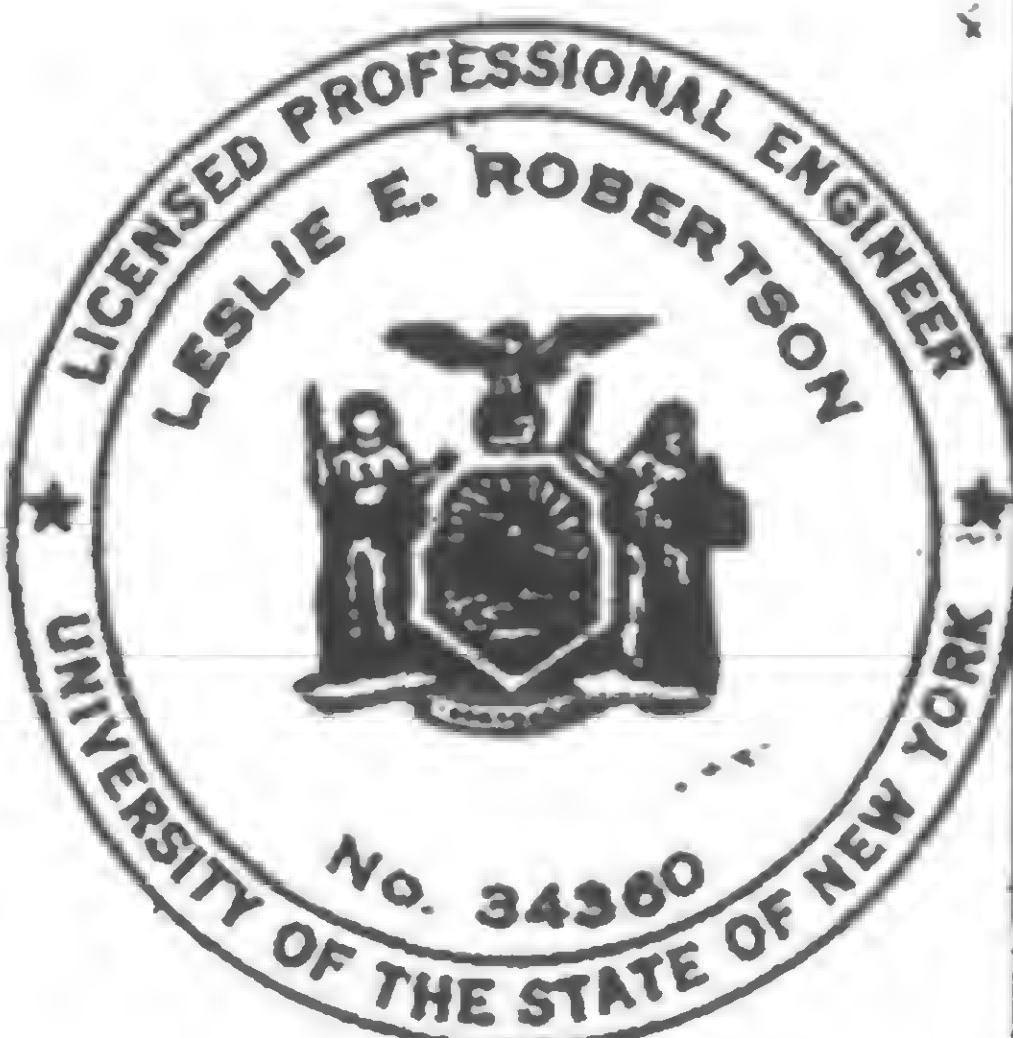
TYPE ATYPE BTYPE CTYPE DTYPE ETYPE FPLAN - TYPE FTYPE J

At Col. 704 as shown  
Col. 703, 803, 804A  
similar

Notes: 1. For typical "T" connection see Dwg. 19-AB-954.  
2. For details of seated connections see Dwg. 19-AB-954.

AT COL 703

19-AB-953



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F. Smith

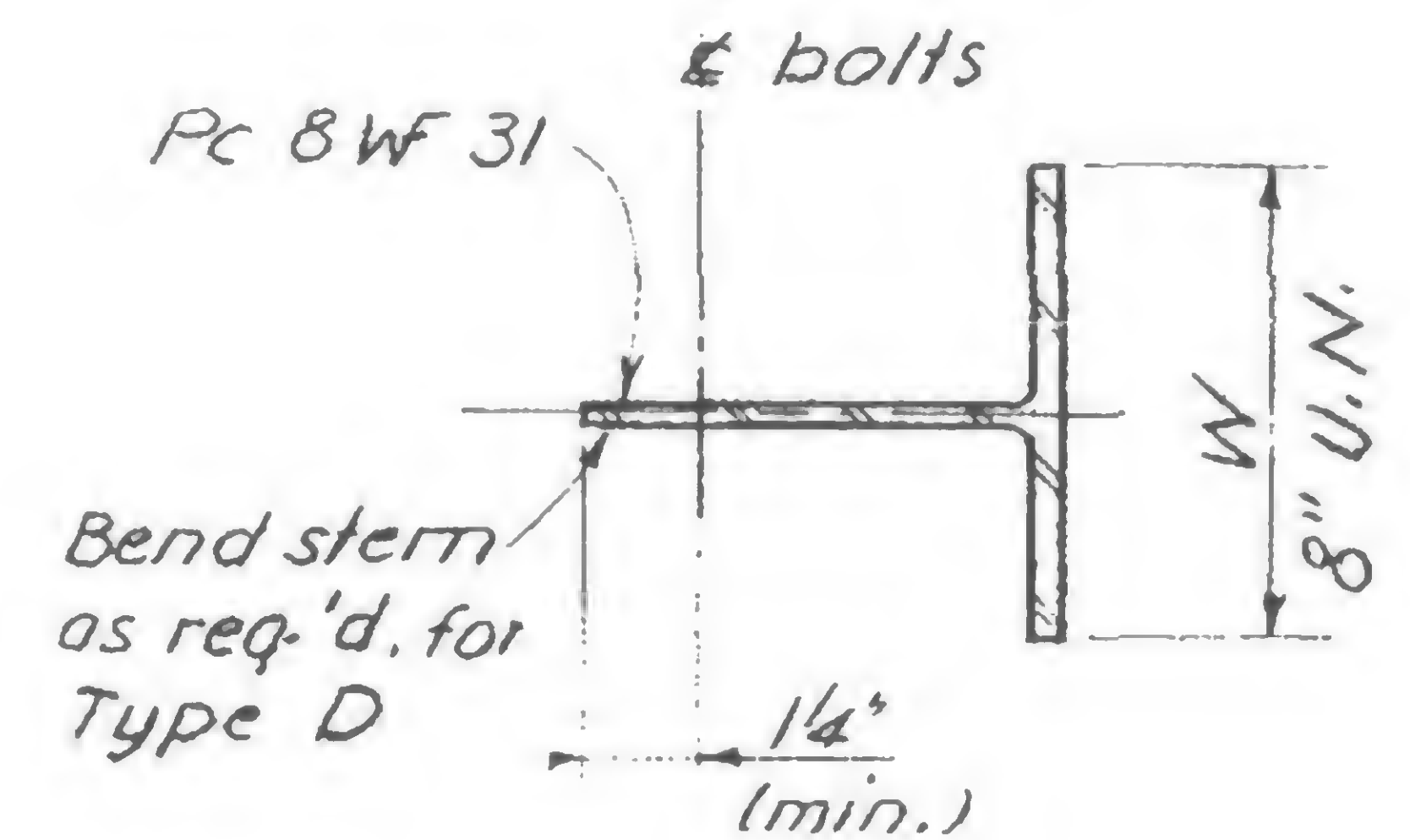
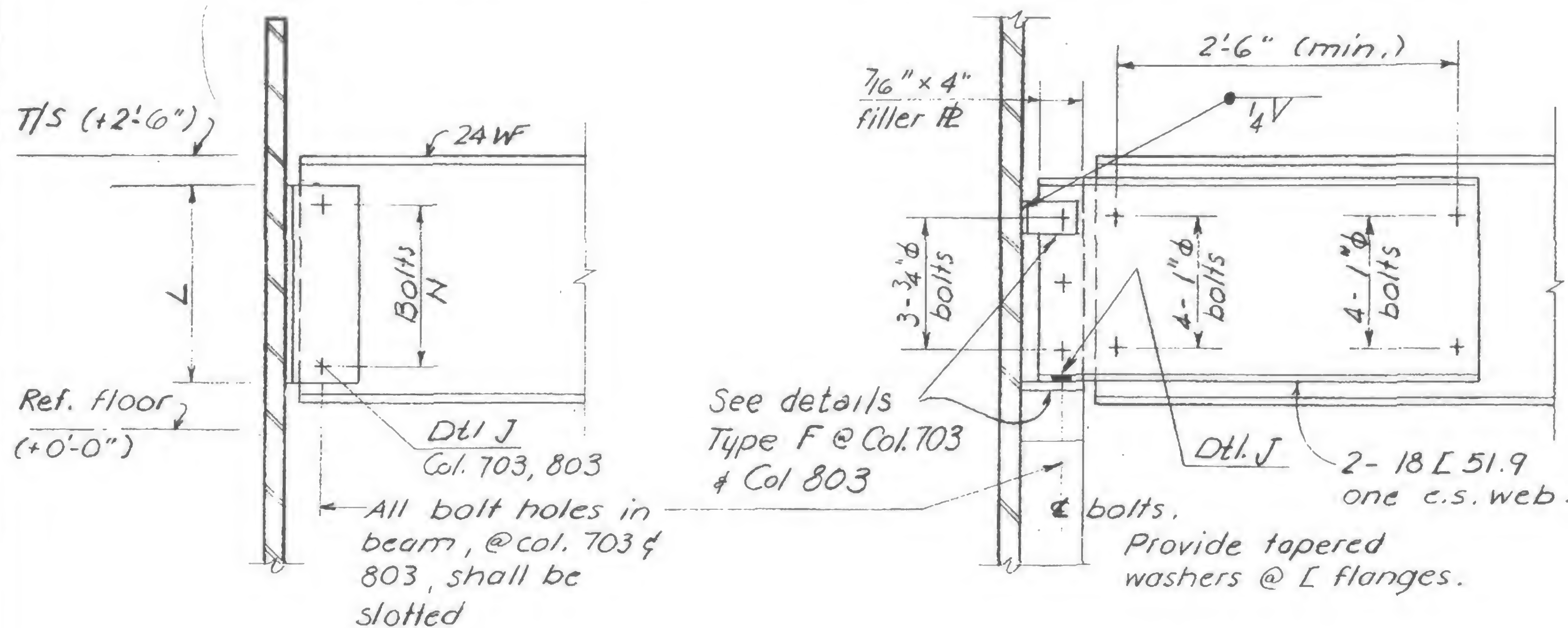
REVIEWED



## REVISIONS

8-11-69

12-7-70



Detail H  
Typical 'T' Connection.

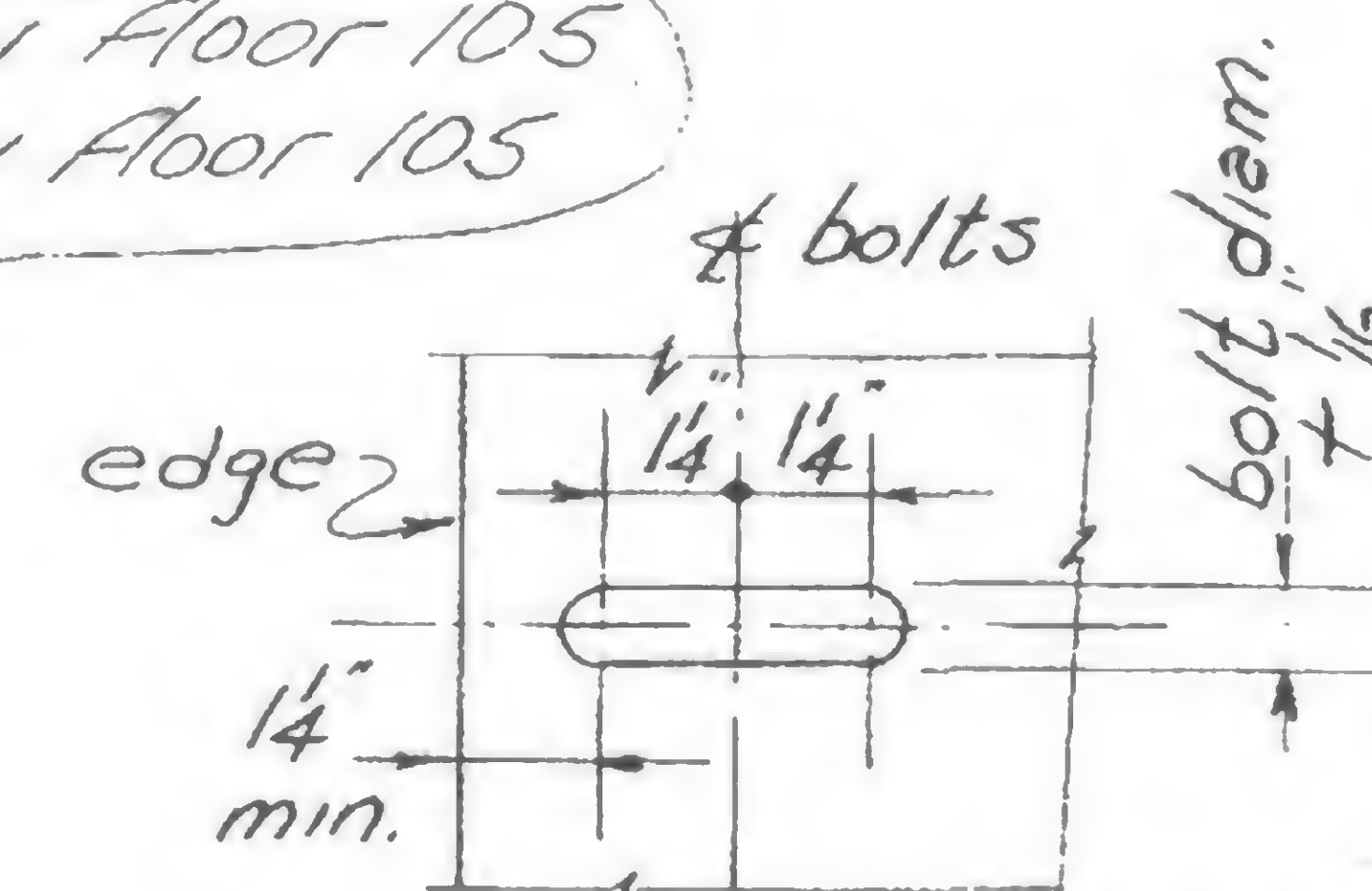
Detail GTypical Support Beam Extension

Col. 703, Above Floor 75, Below Floor 105  
Col. 803, Above Floor 95, Below Floor 105

Typical Section @ Columns  
Type A, B, C, D.

COLUMN CONNECTION SCHEDULE

LOCATION*			TYPE	e (IN)	BOLTS		CONNECTION		REMARKS
COL.	FLOOR TOWER A	FLOOR TOWER B			SIZE	N	L	WELD ①	
703	20-74	11-74	A	12 $\frac{3}{8}$ "	1" $\phi$	6	1-5 $\frac{1}{2}$ "	$\frac{5}{16}$	
	76-105	76-105	F	4 $\frac{1}{2}$ "	$\frac{3}{4}$ " $\phi$	2	0'-10"	$\frac{5}{16}$	Use detail G @ 703
704	20-74	11-74	C	11 $\frac{3}{4}$ "	1" $\phi$	6	1-5 $\frac{1}{2}$ "	$\frac{5}{16}$	
	76-105	76-105	D	11 $\frac{3}{4}$ "	1" $\phi$	6	1-5 $\frac{1}{2}$ "	$\frac{5}{16}$	W=6" @ Dtl H, Above F95.
803	20-94	11-94	B	12 $\frac{3}{8}$ "	1" $\phi$	6	0'-11 $\frac{1}{2}$ "	$\frac{5}{16}$	
	97-105	97-105	F	3 $\frac{1}{2}$ "	$\frac{3}{4}$ " $\phi$	2	0'-10"	$\frac{5}{16}$	Use detail G @ 803
804	20-105	11-105	E	11 $\frac{1}{16}$ "	$\frac{3}{4}$ " $\phi$	2	-	$\frac{5}{16}$	

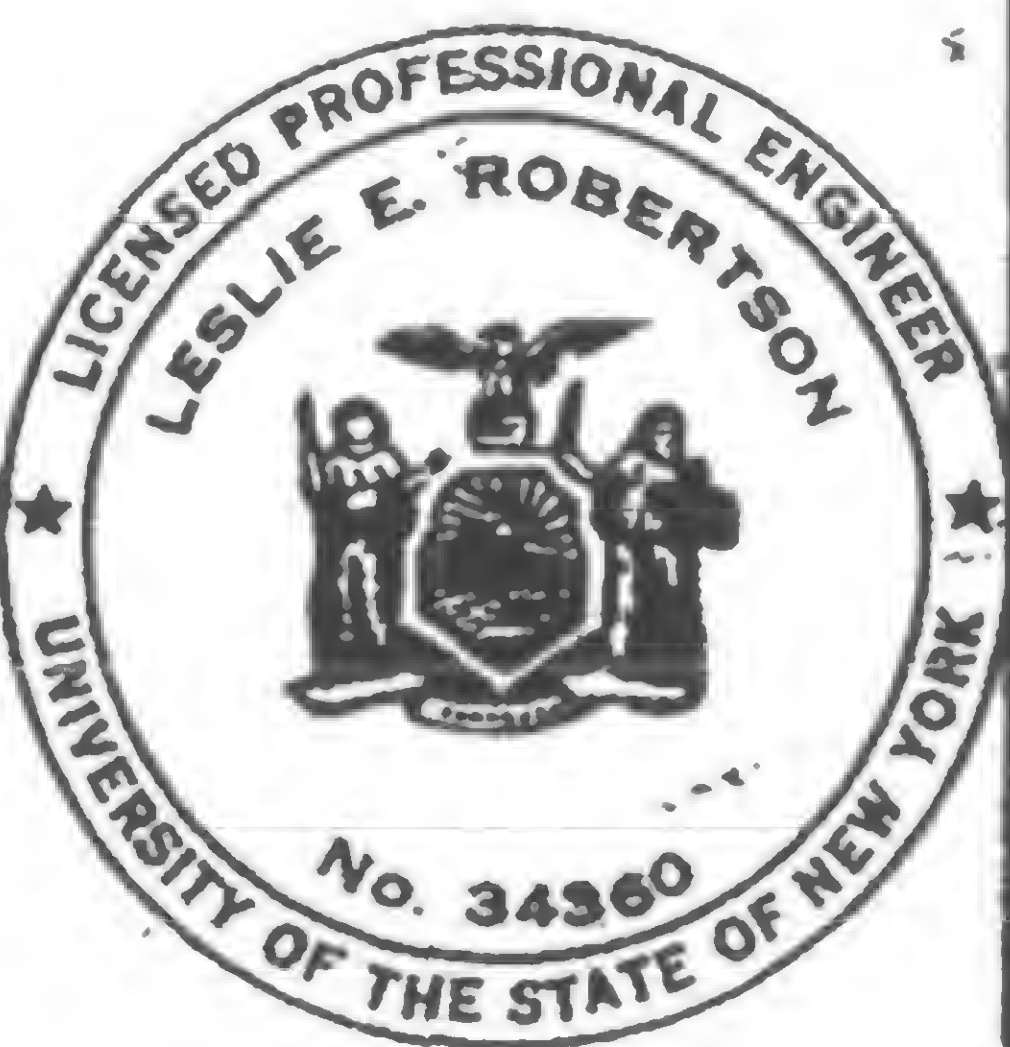


Use hardened washer against  
slotted face,  $\frac{3}{8}$ " thick.

Detail J - Slotted Holes in Beams  
@ Columns 703 & 803

\* Twr A, Connections @ Floors: 20, 23, 26, 29, 32, 35, 38, 40, 42, 44, 47, 50,  
53, 56, 59, 62, 65, 68, 71, 74, 76, 79, 82, 85, 88, 91, 94, 97, 100, 103, 105

\* Twr B, Connections @ Floors: 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 40, 42, 44, 47, 50,  
53, 56, 59, 62, 65, 68, 71, 74, 76, 79, 82, 85, 88, 91, 94, 97, 100, 103



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DRAWN

F. Smith

REVIEWED



PROJECT

THE WORLD TRADE CENTER

TITLE

CONCRETE HOIST CATHEAD SUPPORT

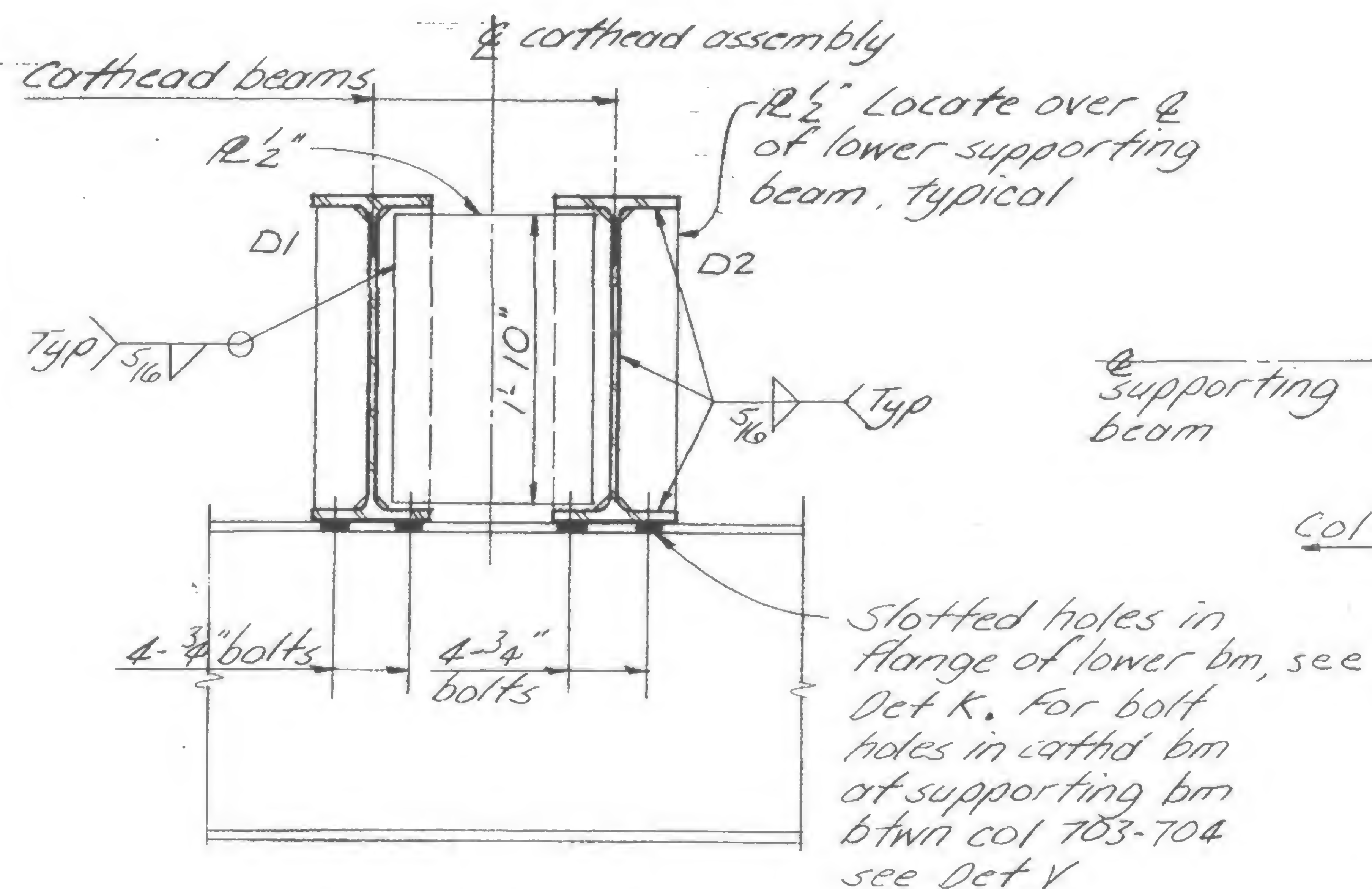
DATE

5-12-69

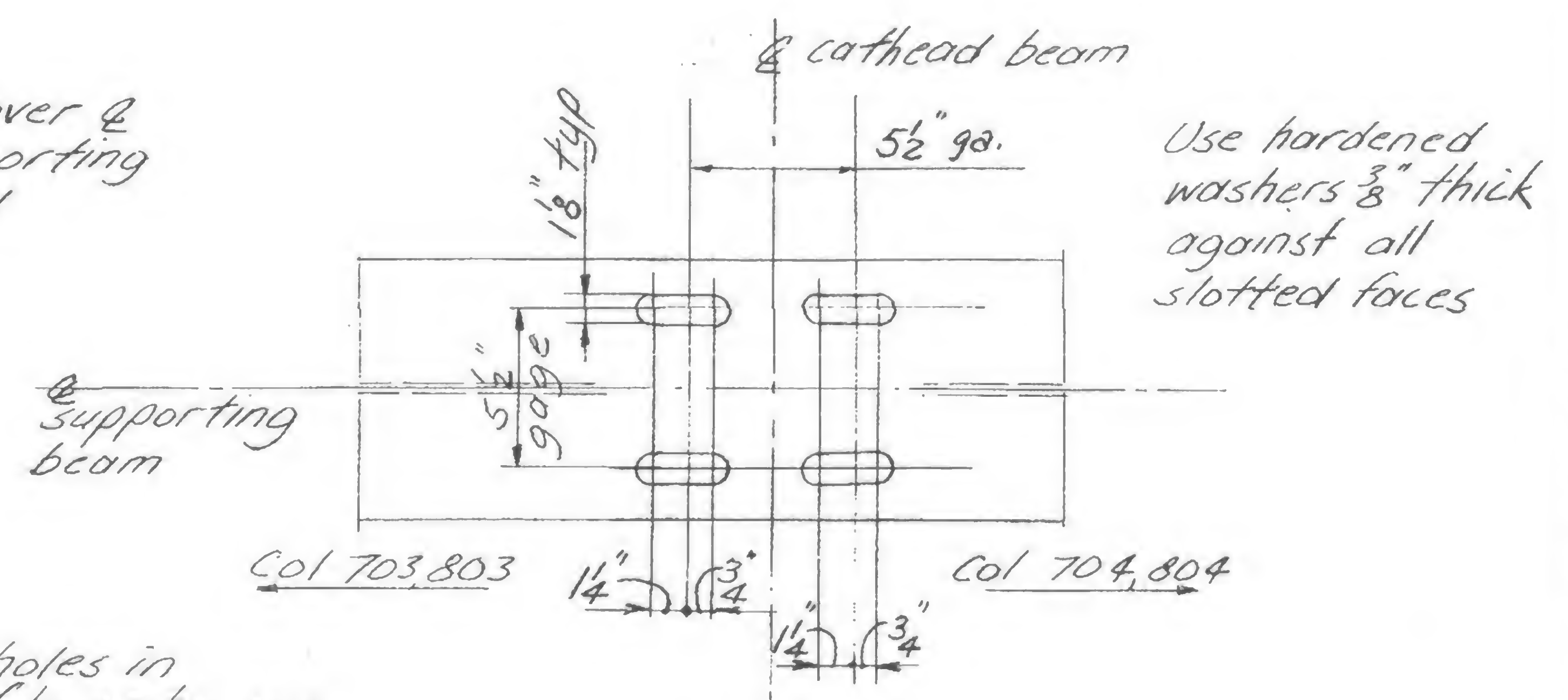
## REVISIONS

5-21-69

8-11-69

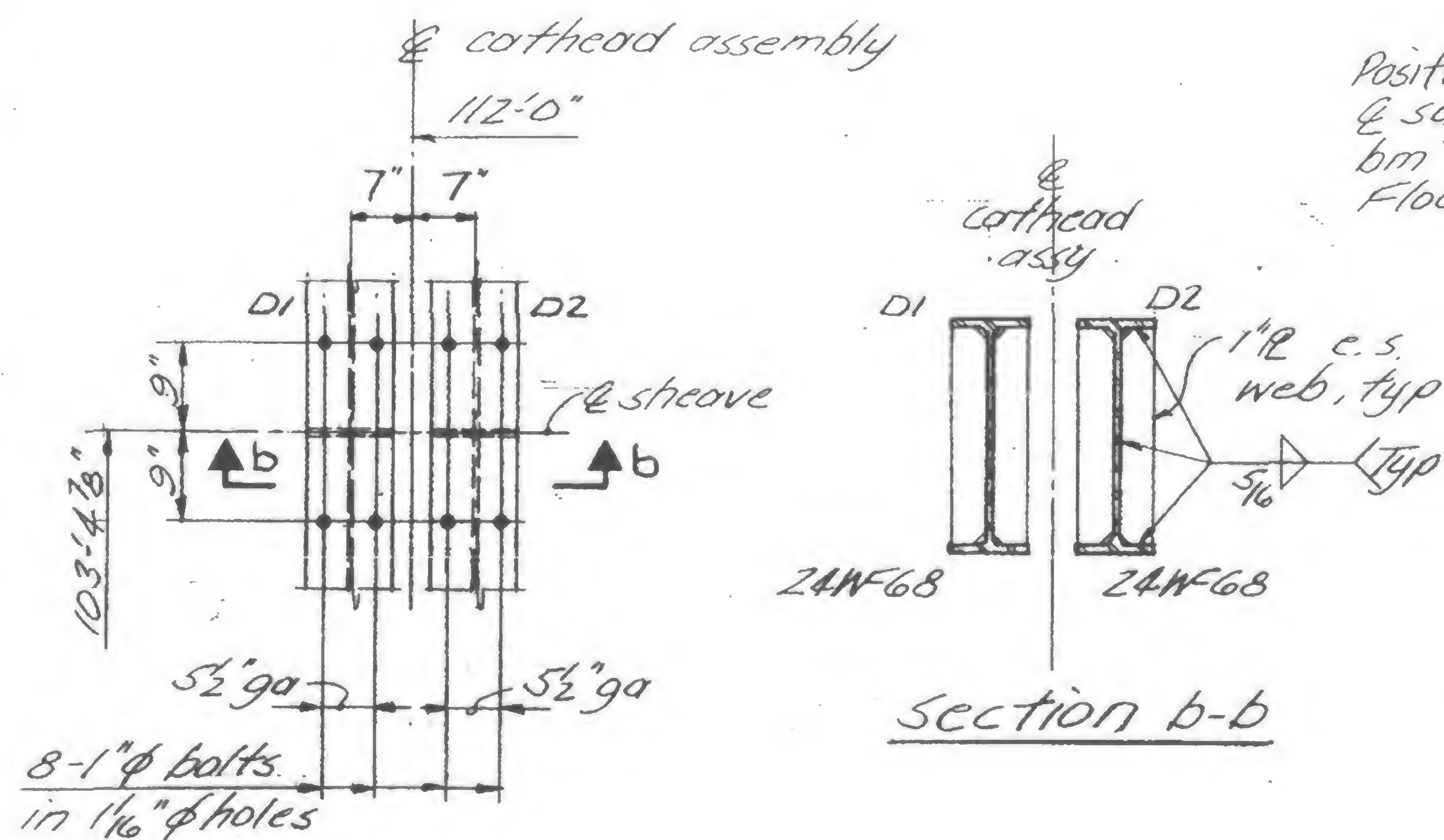


Section a-a.



Detail K

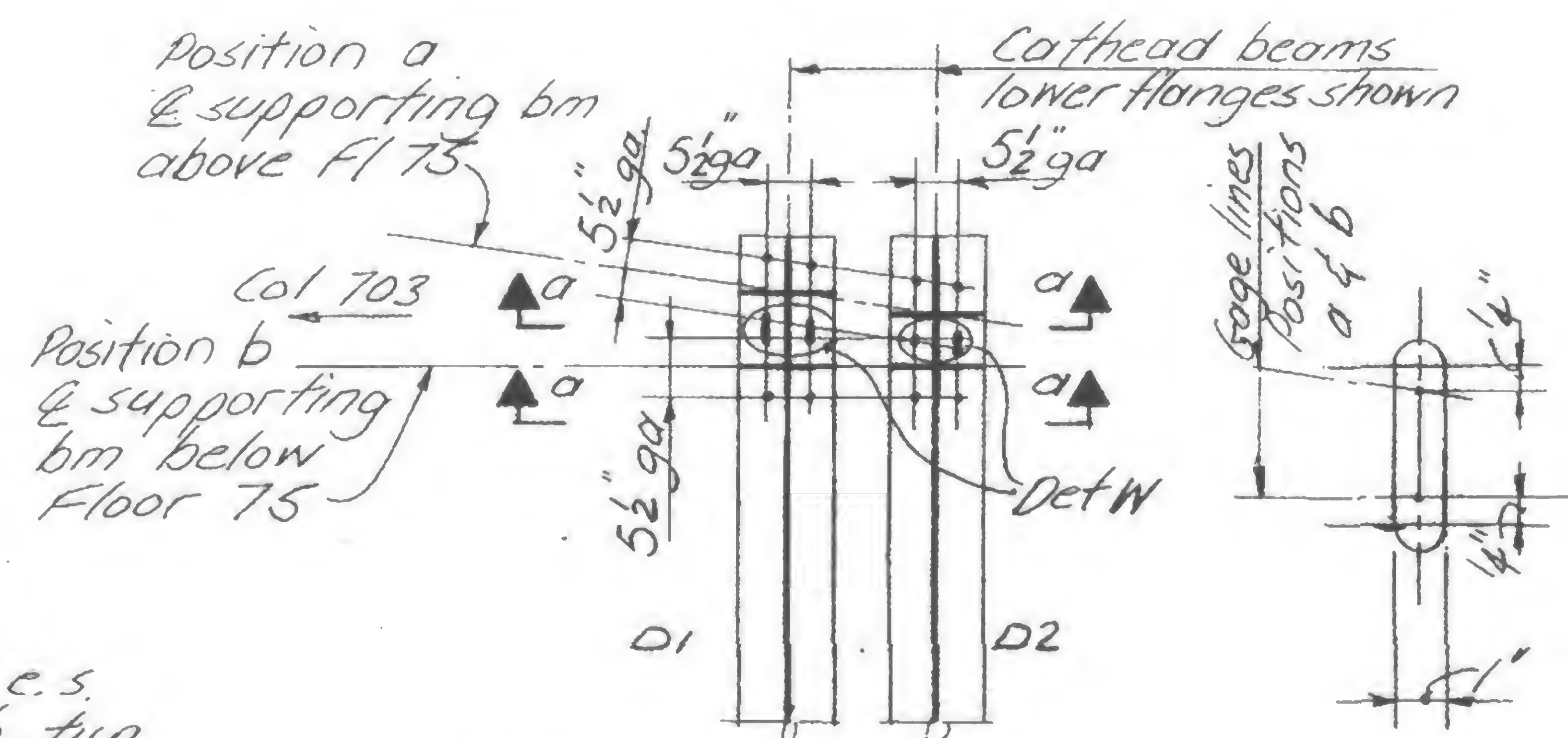
SLOTTED HOLES IN SUPPORTING BEAMS AT CATHEAD CONNECTIONS



Section b-b

DETAIL X

SHEAVE CONN TO CATHEAD BM

All bolt holes 1"  $\phi$  except Det W.

DETAIL V

CONNECTION HOLES IN CATHEAD BEAMS AT SUPPORT BEAM BETWEEN COL 703 &amp; 704

Use hardened washers  $\frac{3}{8}"$  thick against slotted face

DETAIL W

Ref dwg (Plans) 19AB951

19AB955



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DRAWN

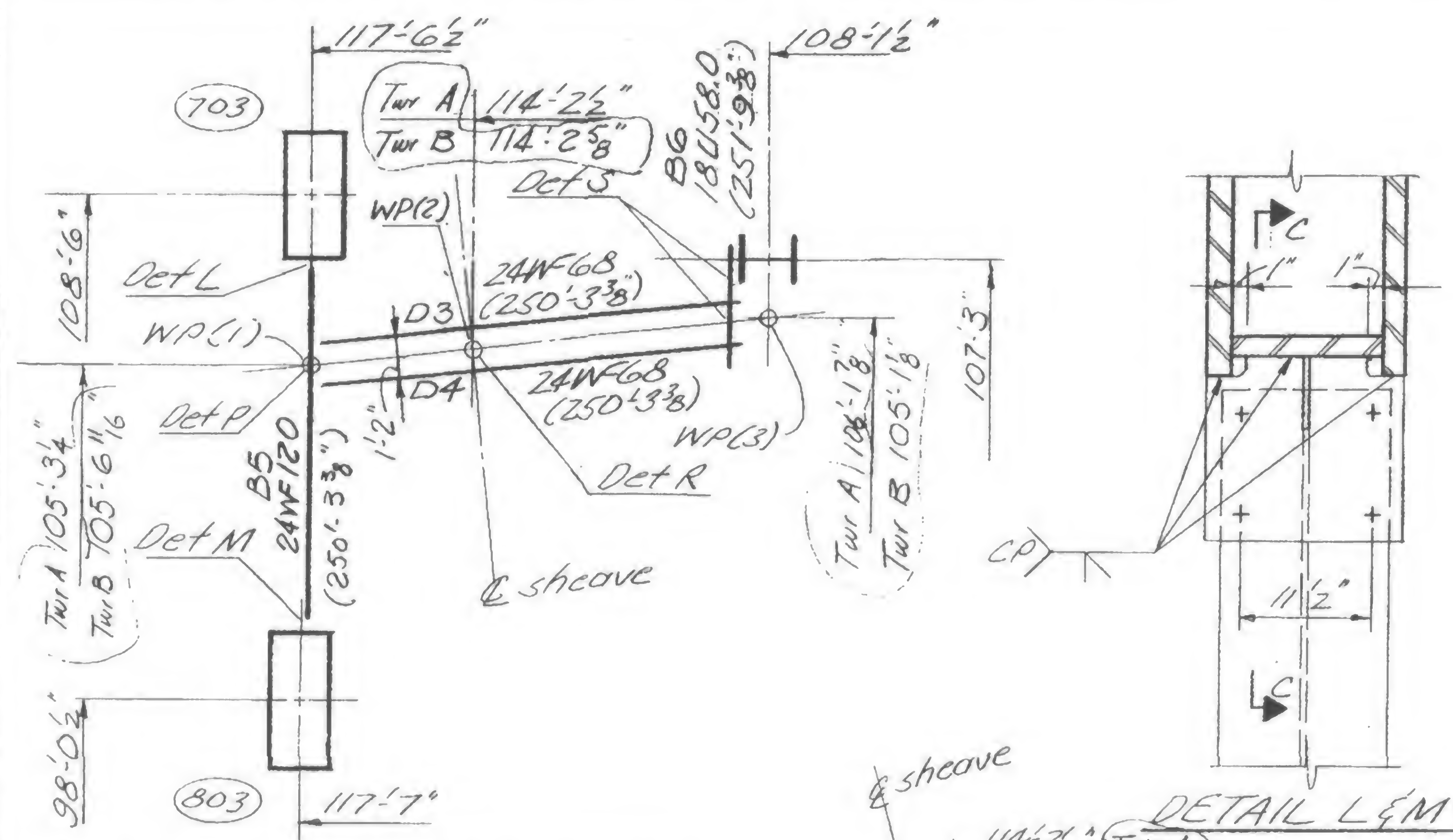
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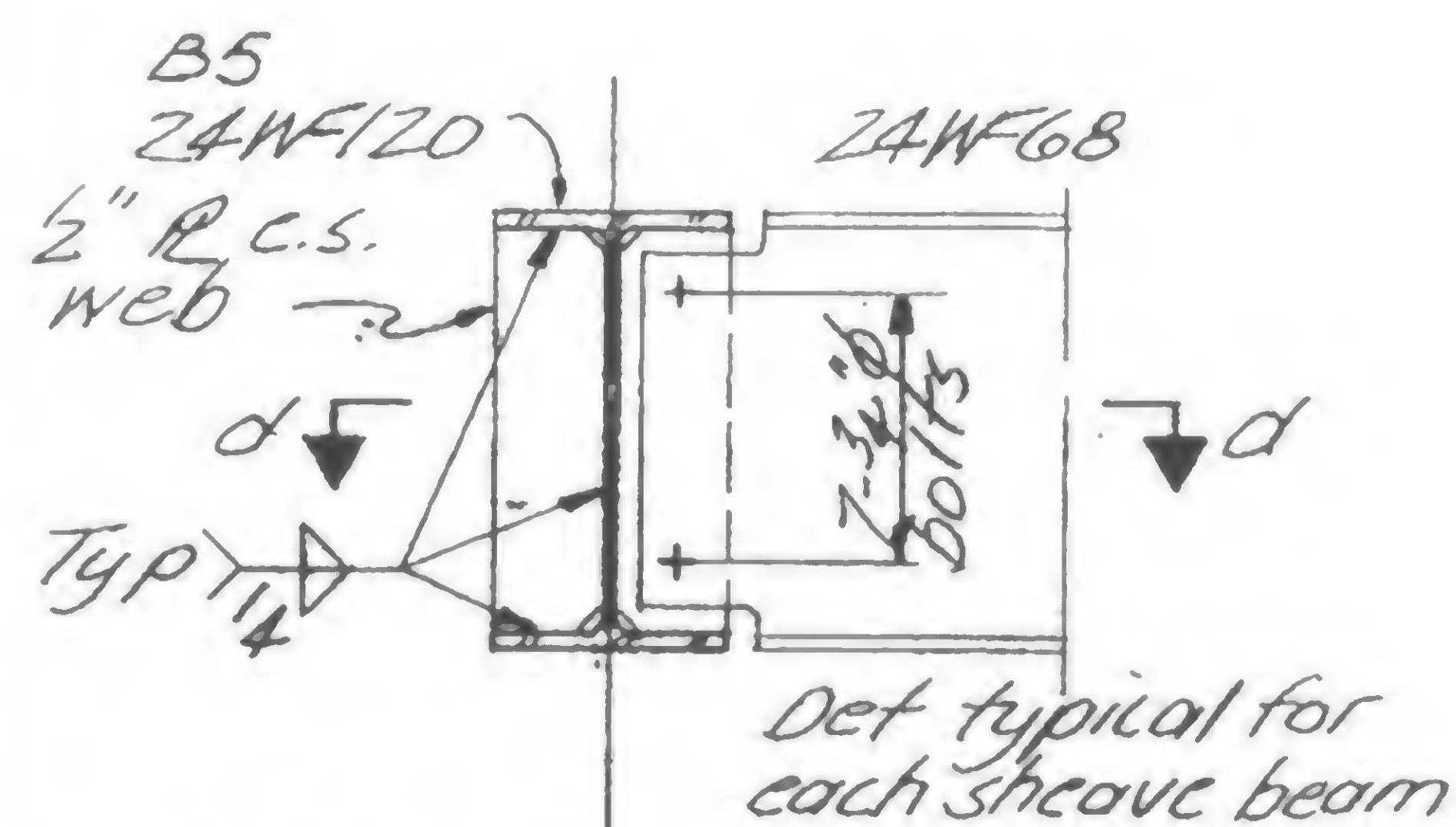
## REVISIONS

5-21-69

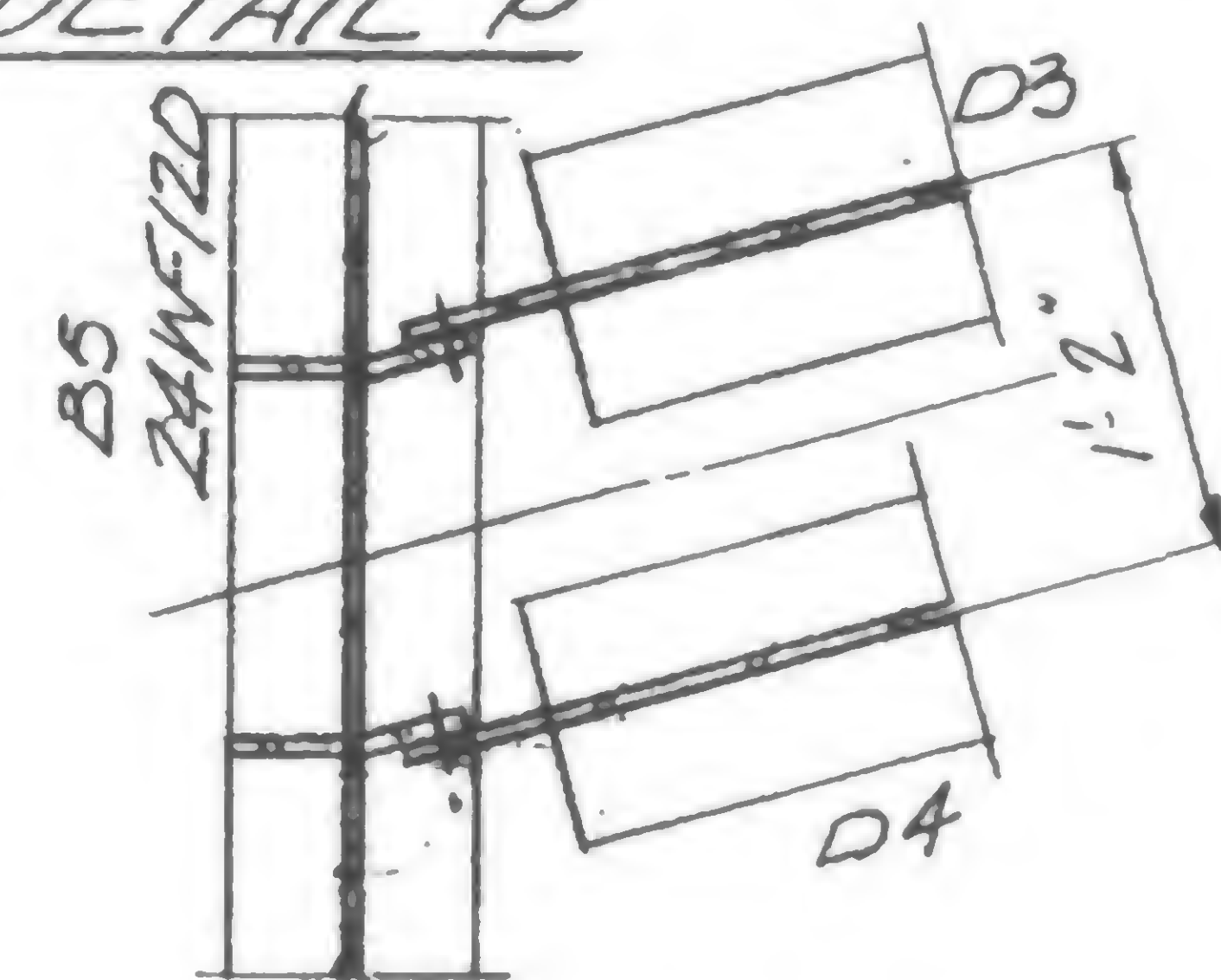
8-11-69



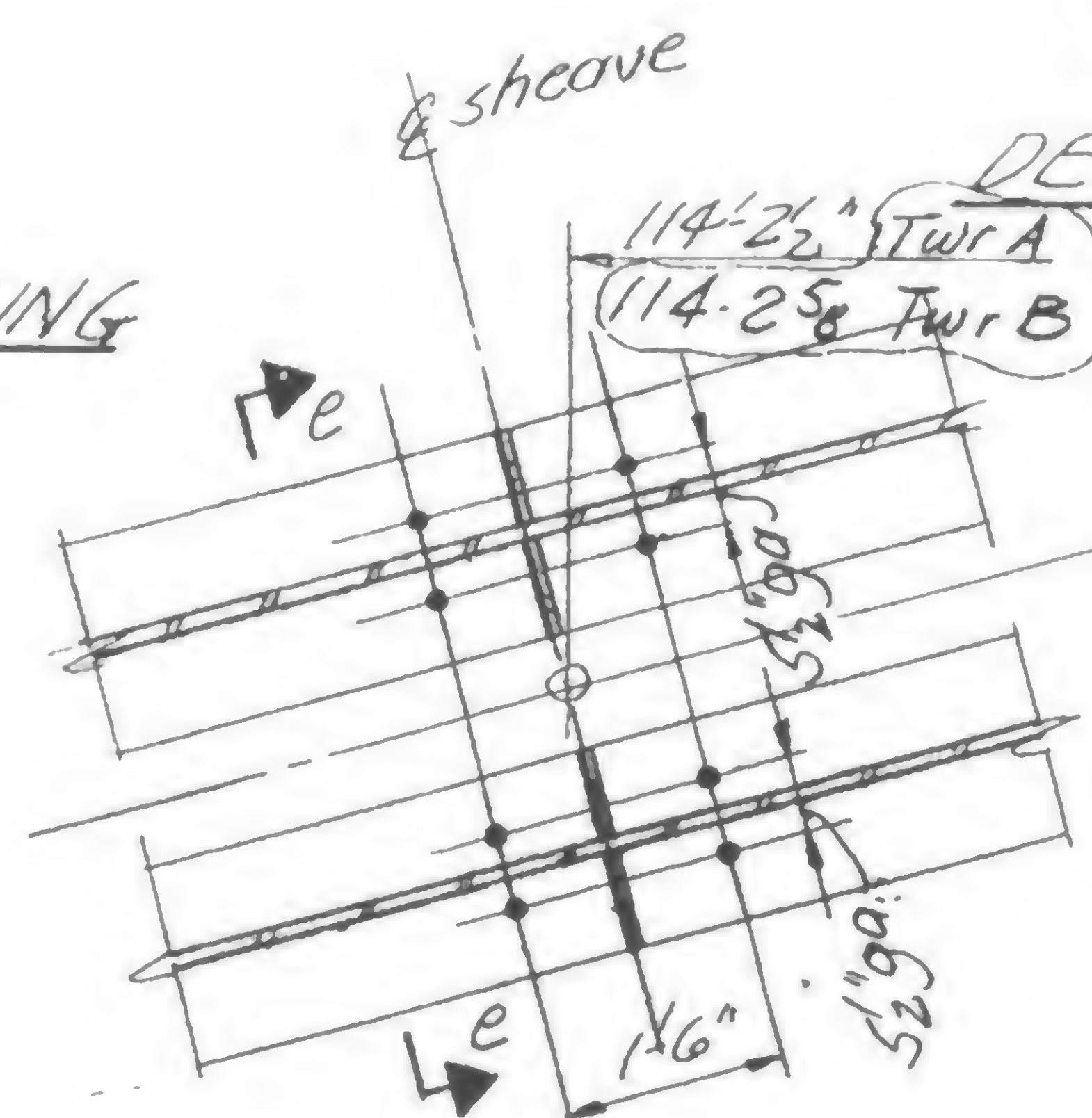
## PLAN-LEAD SHEAVE FRAMING



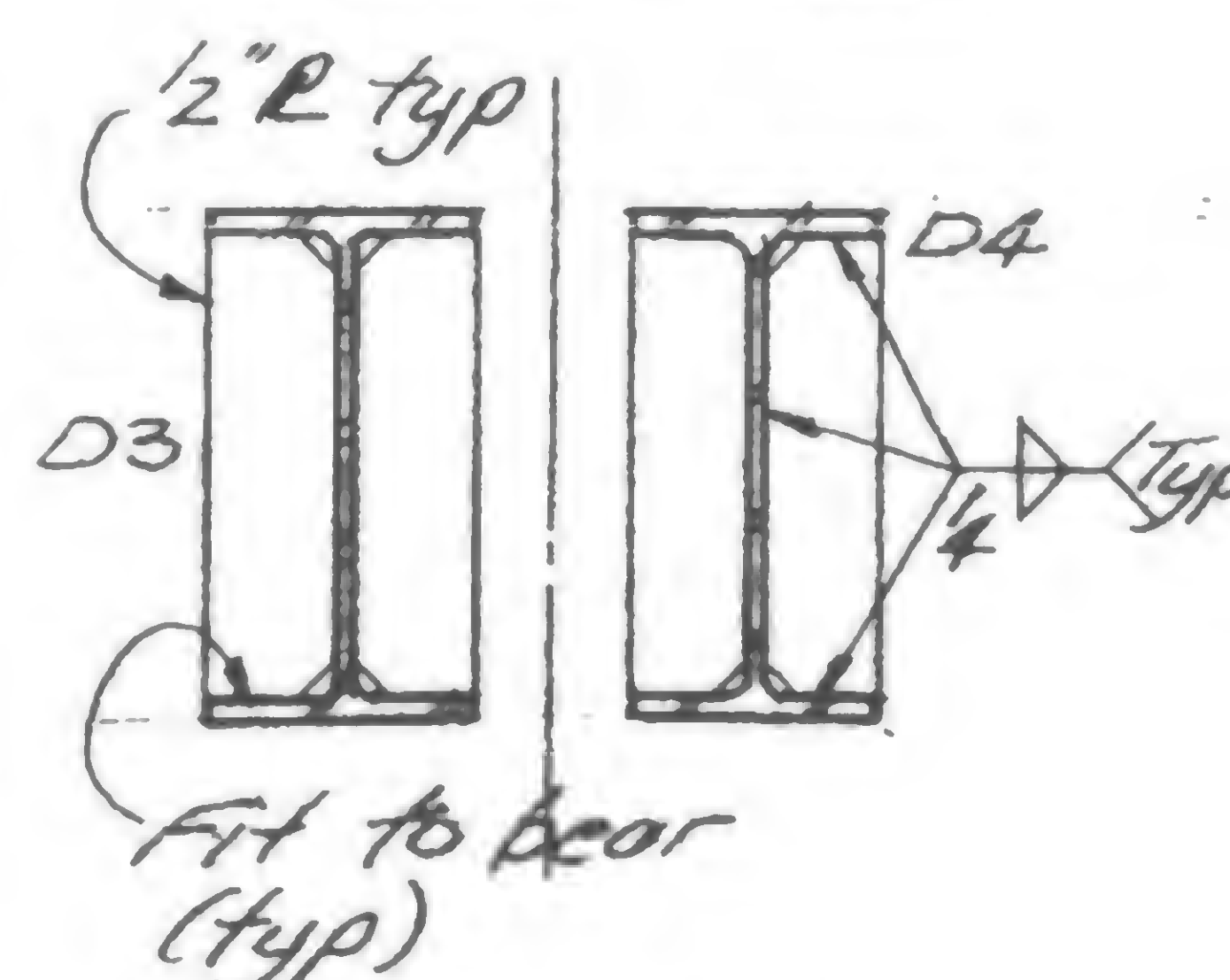
DETAIL P



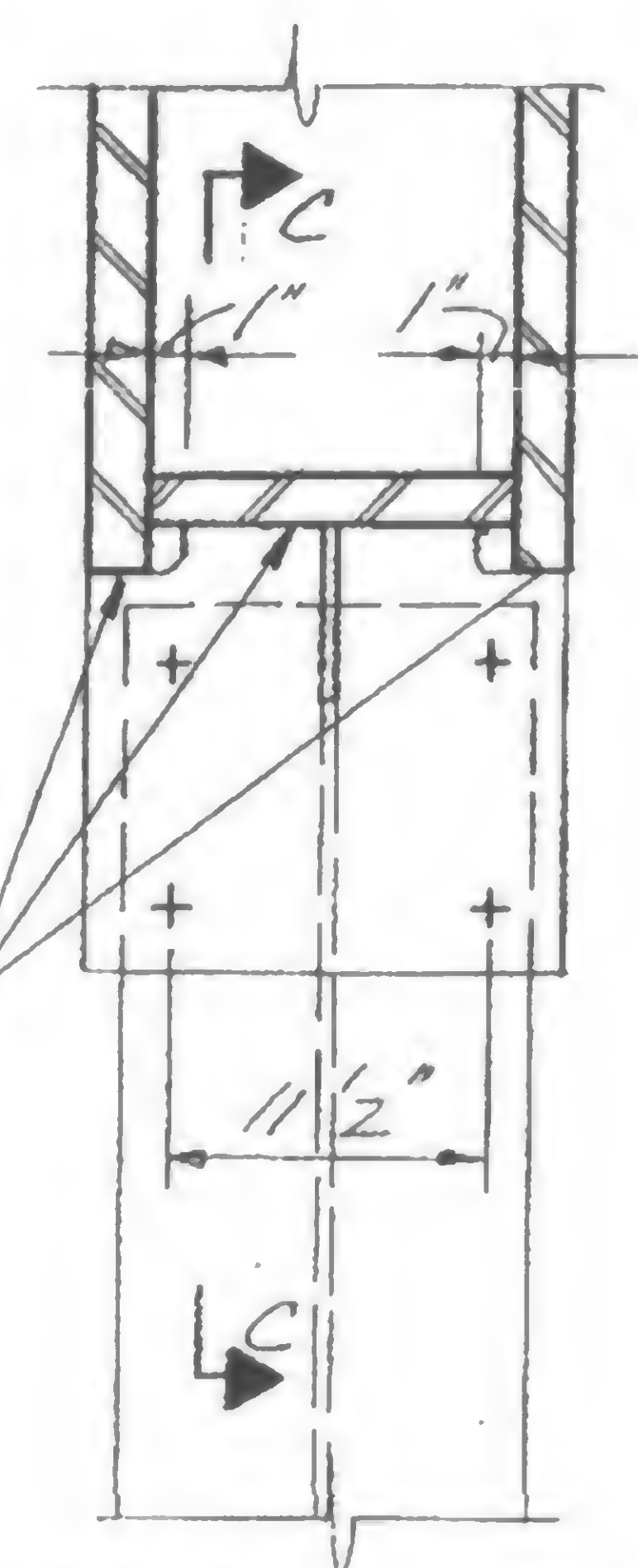
Section d-d



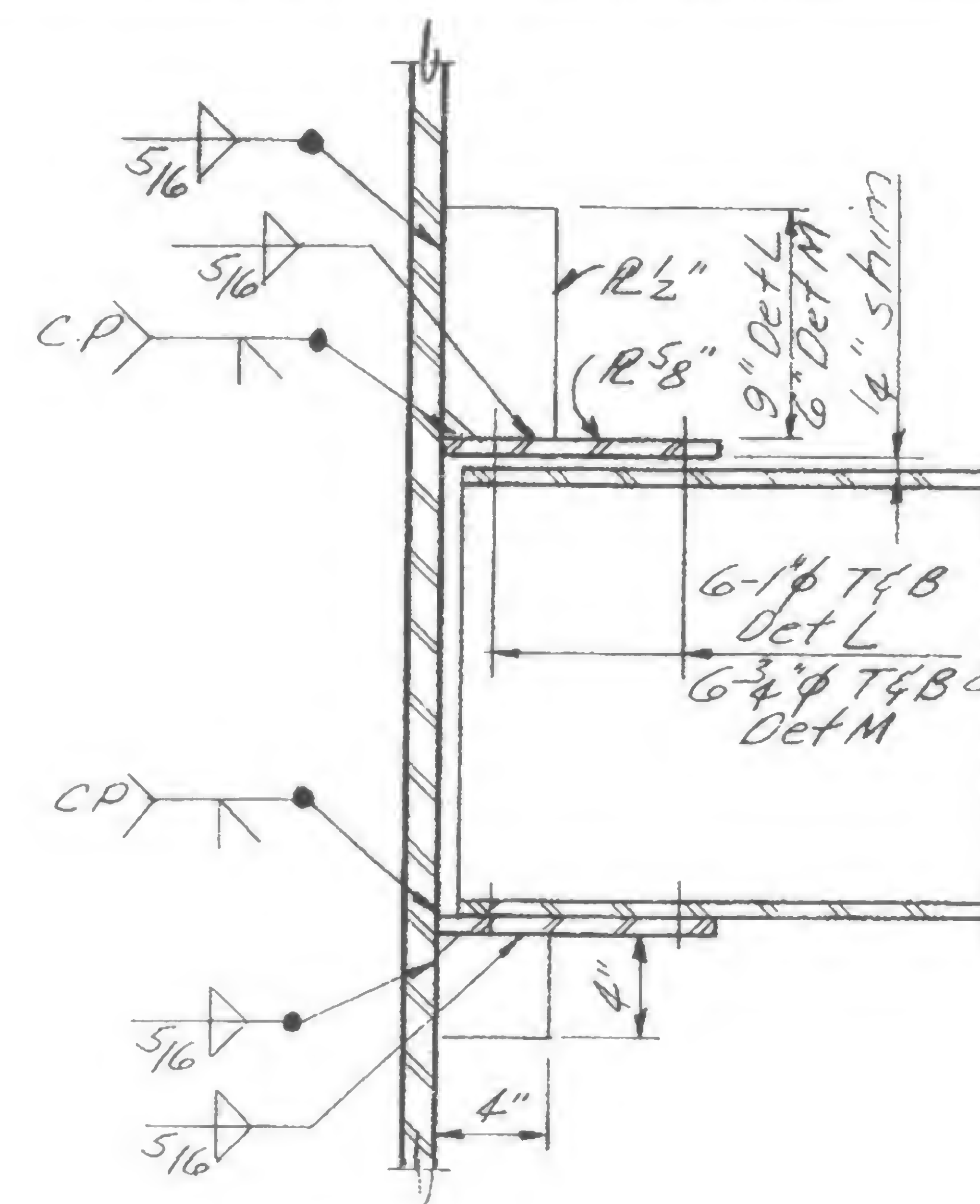
DETAIL R



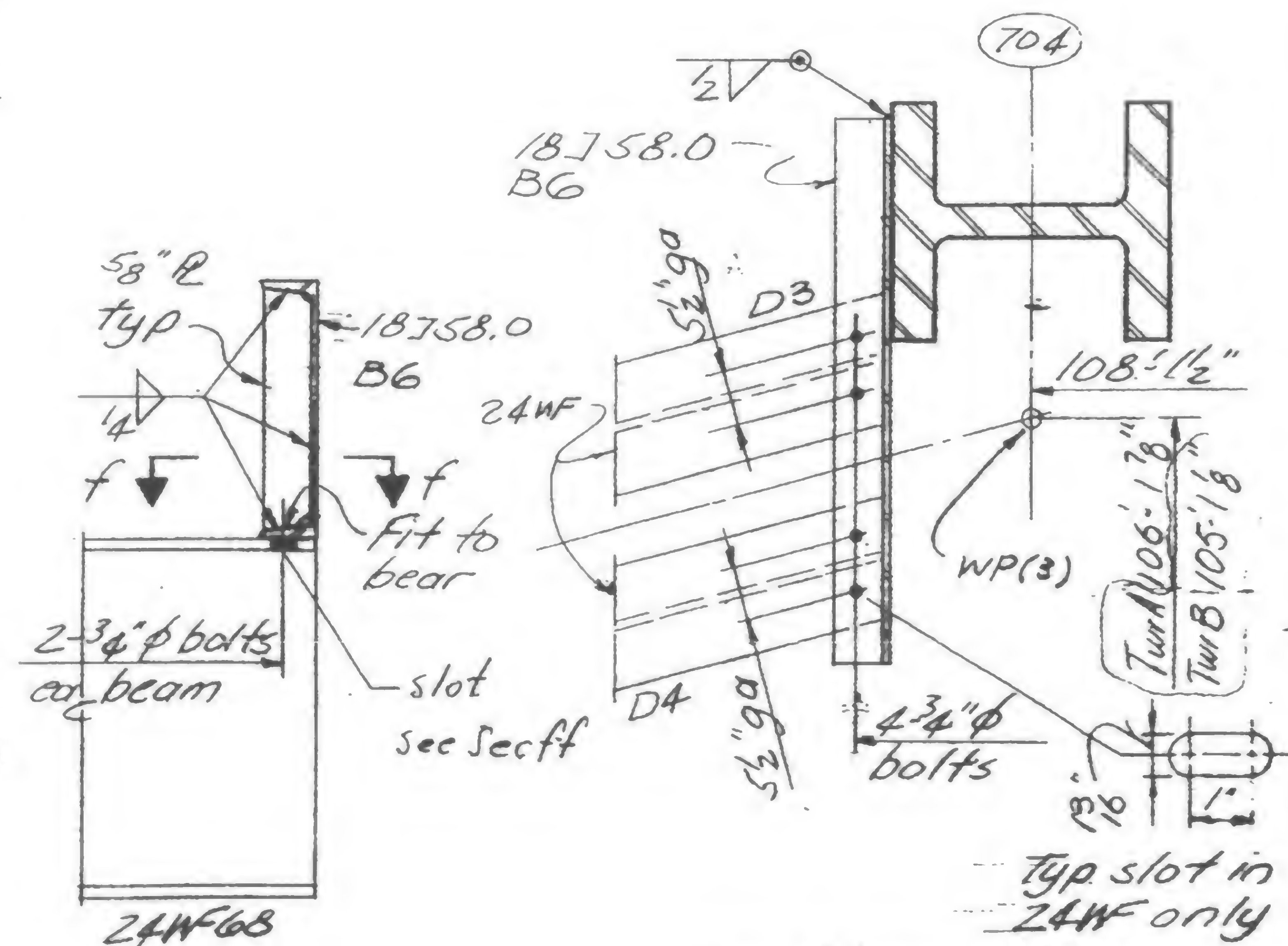
Section e-e



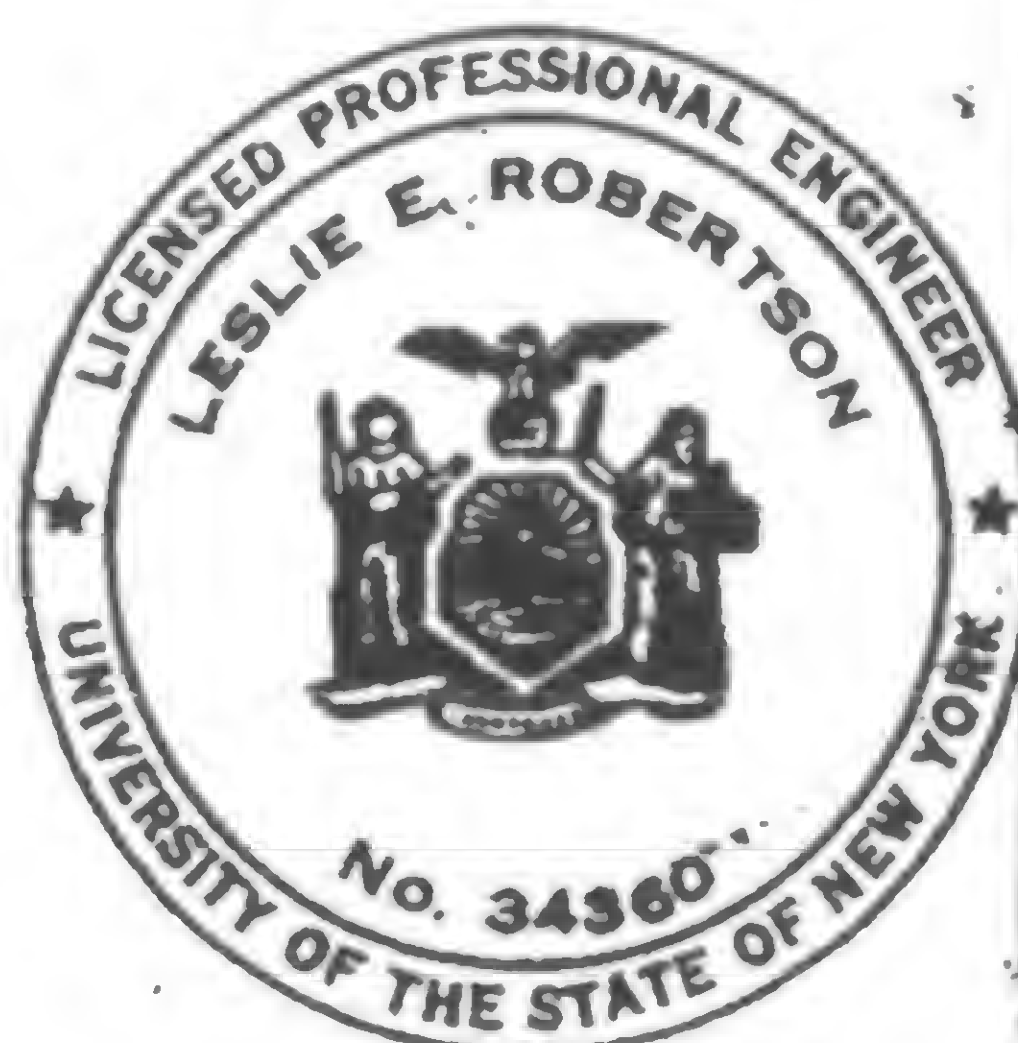
DETAIL LỀM



Section C-C



Section f-f



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**DRAWN**

REVIEWED

19-AB-956

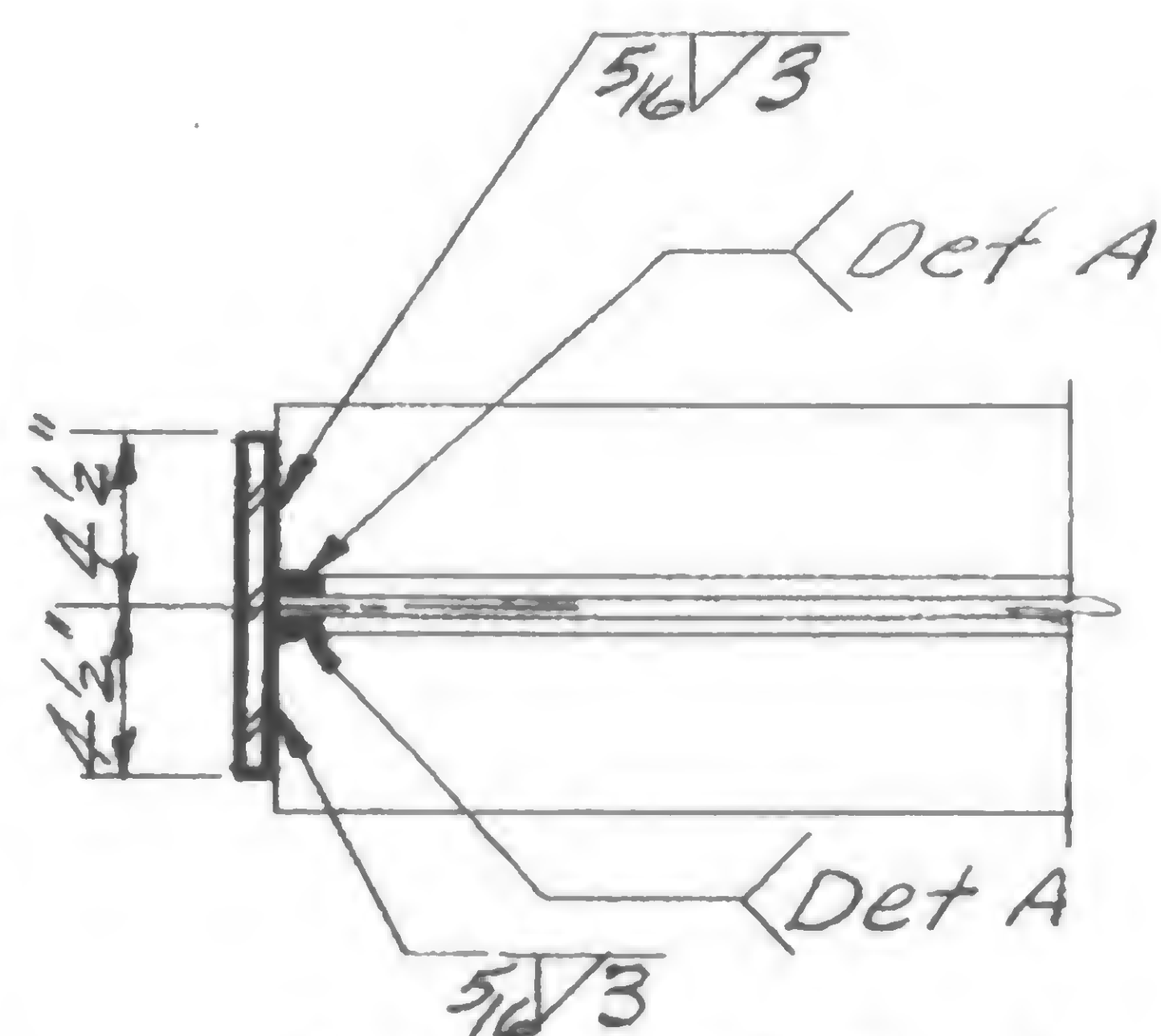
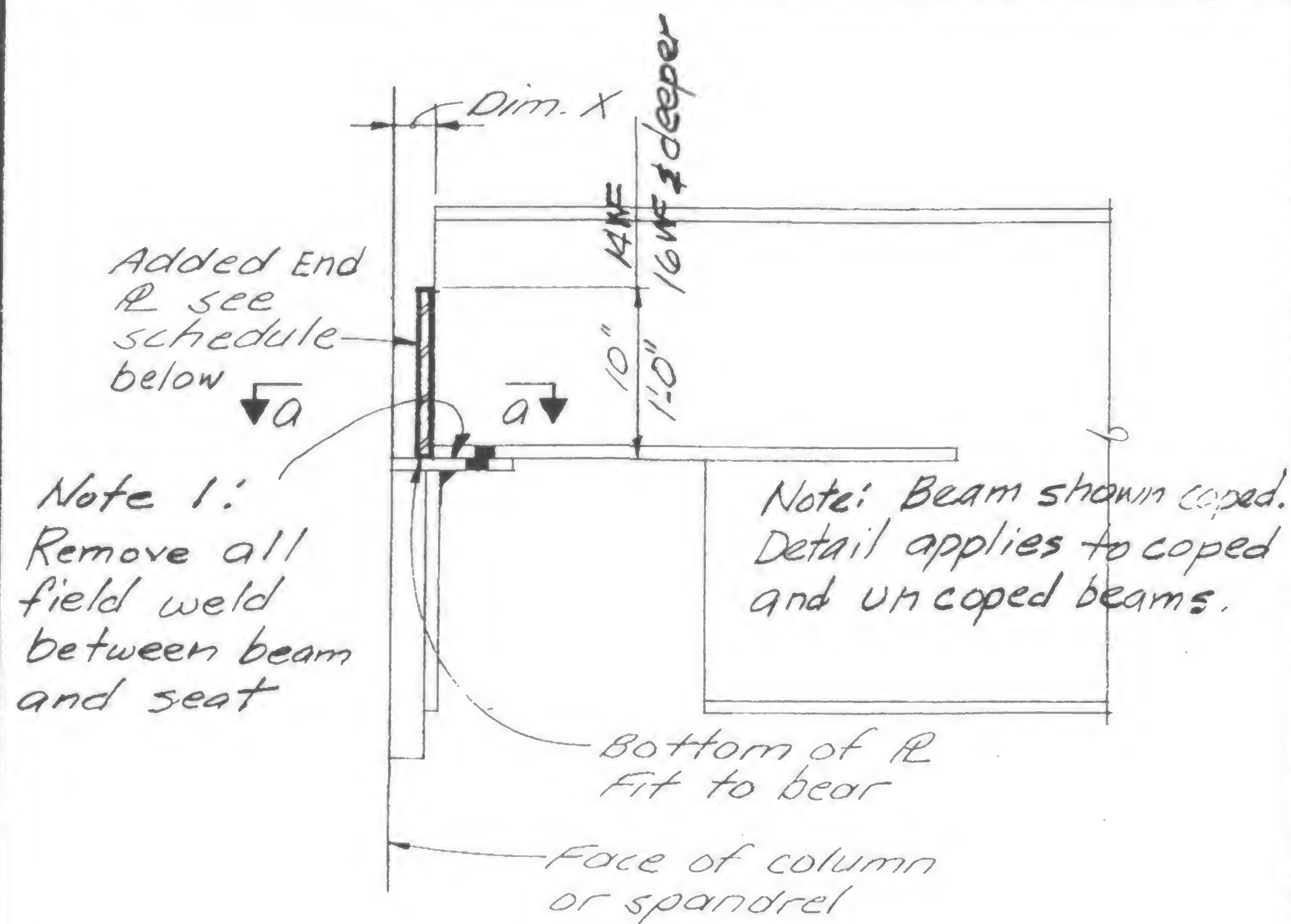


PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL-BEAM SEAT REPAIR - FL. 7 &amp; 9

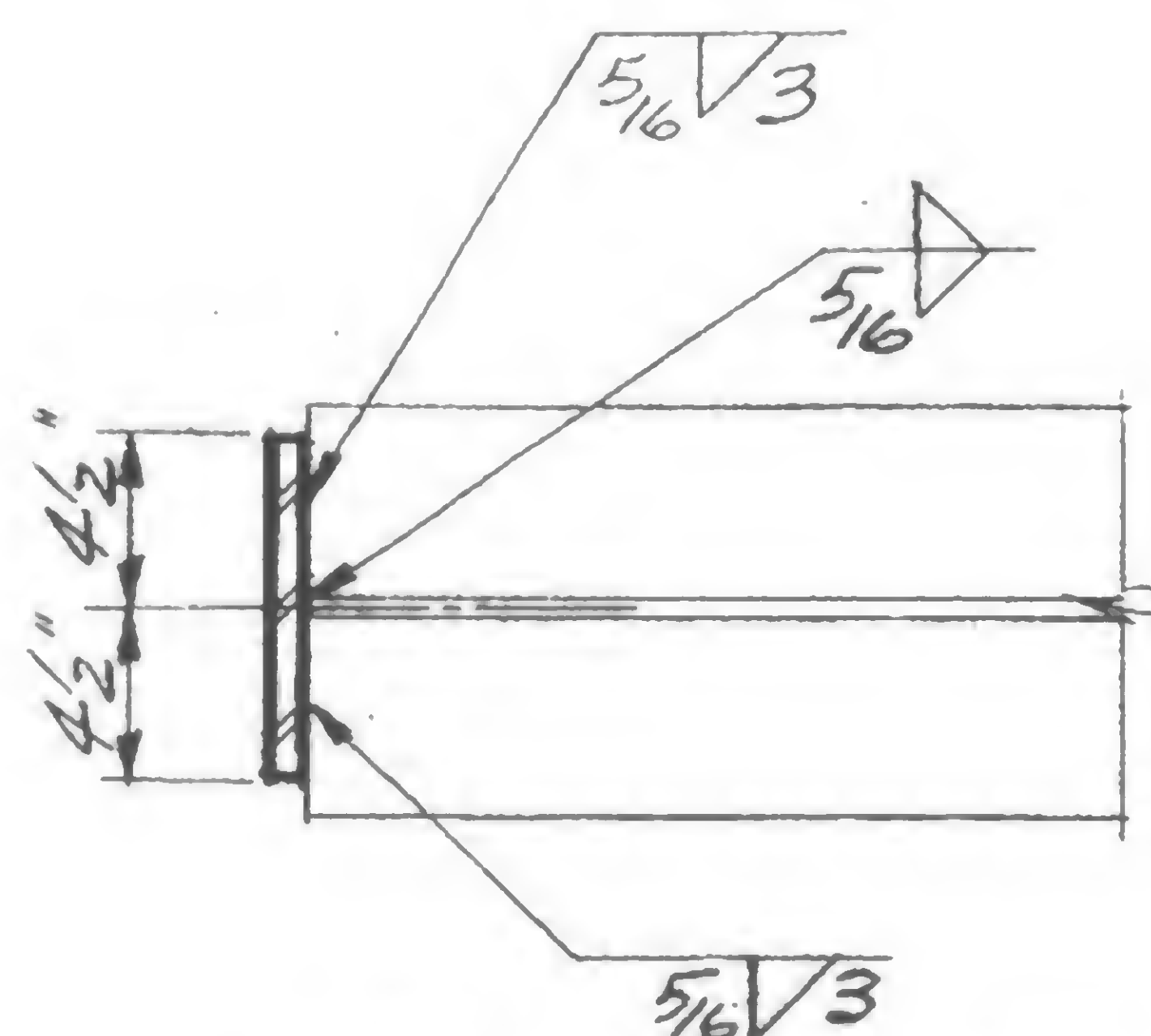
DATE 8/20/69

## REVISIONS



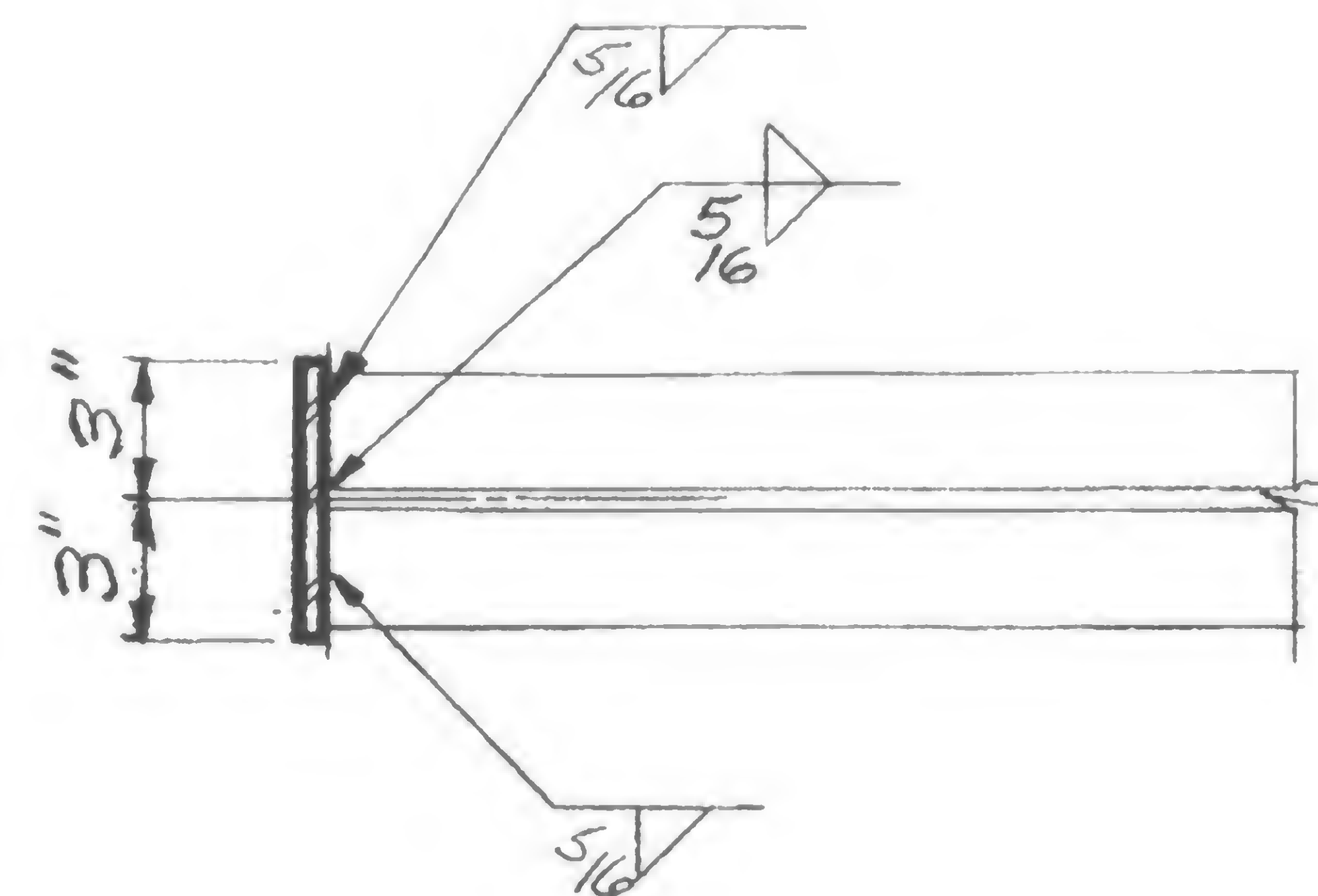
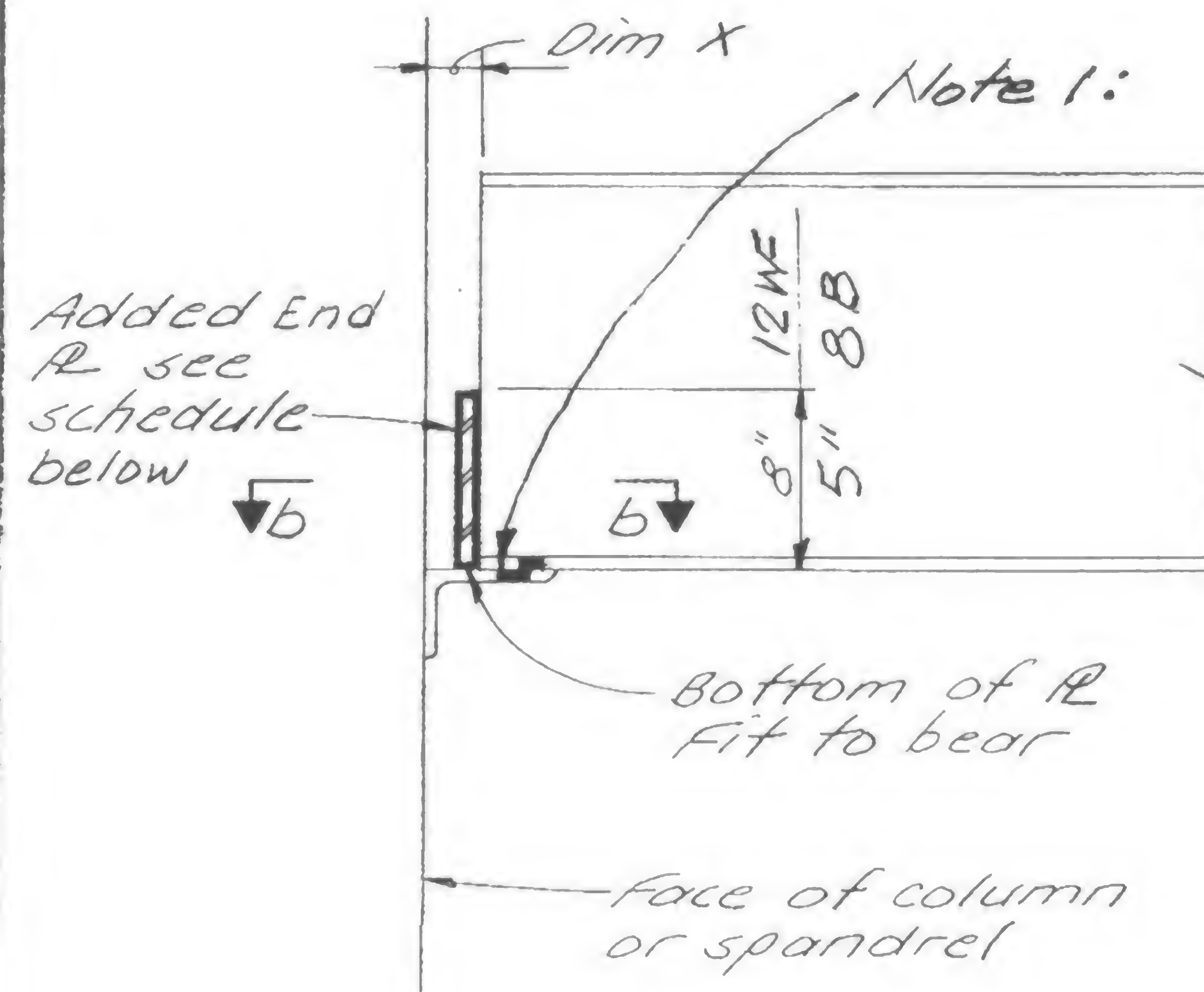
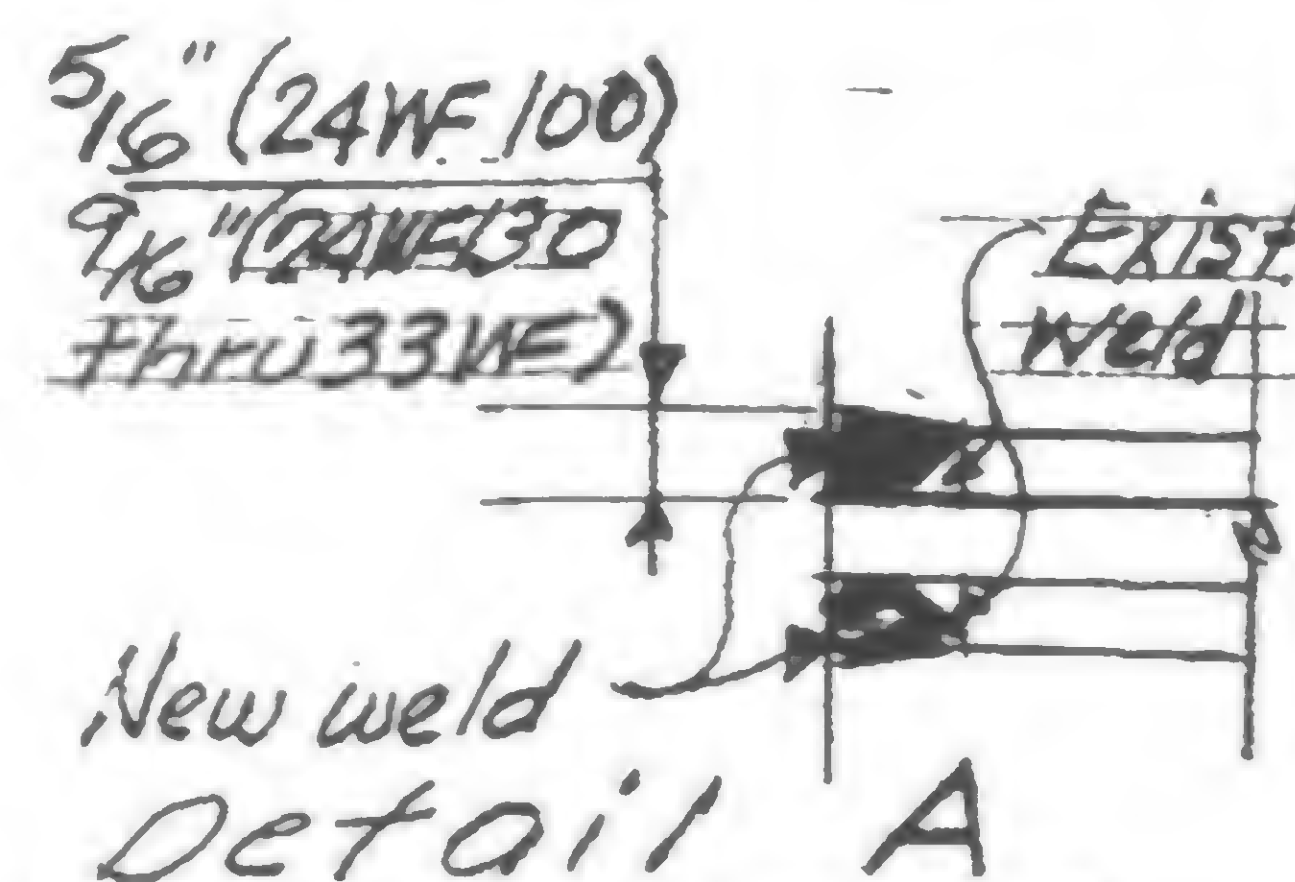
Section A-A

At beams with web doublers



Section A-A

At beams without web doublers



Floor 7 & 9	Thickness
Dim X	End $\bar{R}$
To 1'16"	None
1'8" to 1'2"	1/2"
1'9/16" to 1'3/4"	3/4"
1'13/16" to 2"	1"
2'1/16" to 2'4"	1 1/4"
2'5/16" to 2'2"	1 1/2"

Note: Where repair is required, it is likely that damper conn. will not mate. See 19-AB-958 for repair.

19-AB-957

DESIGNED

H. Root

DRAWN

J. Adams

REVIEWED

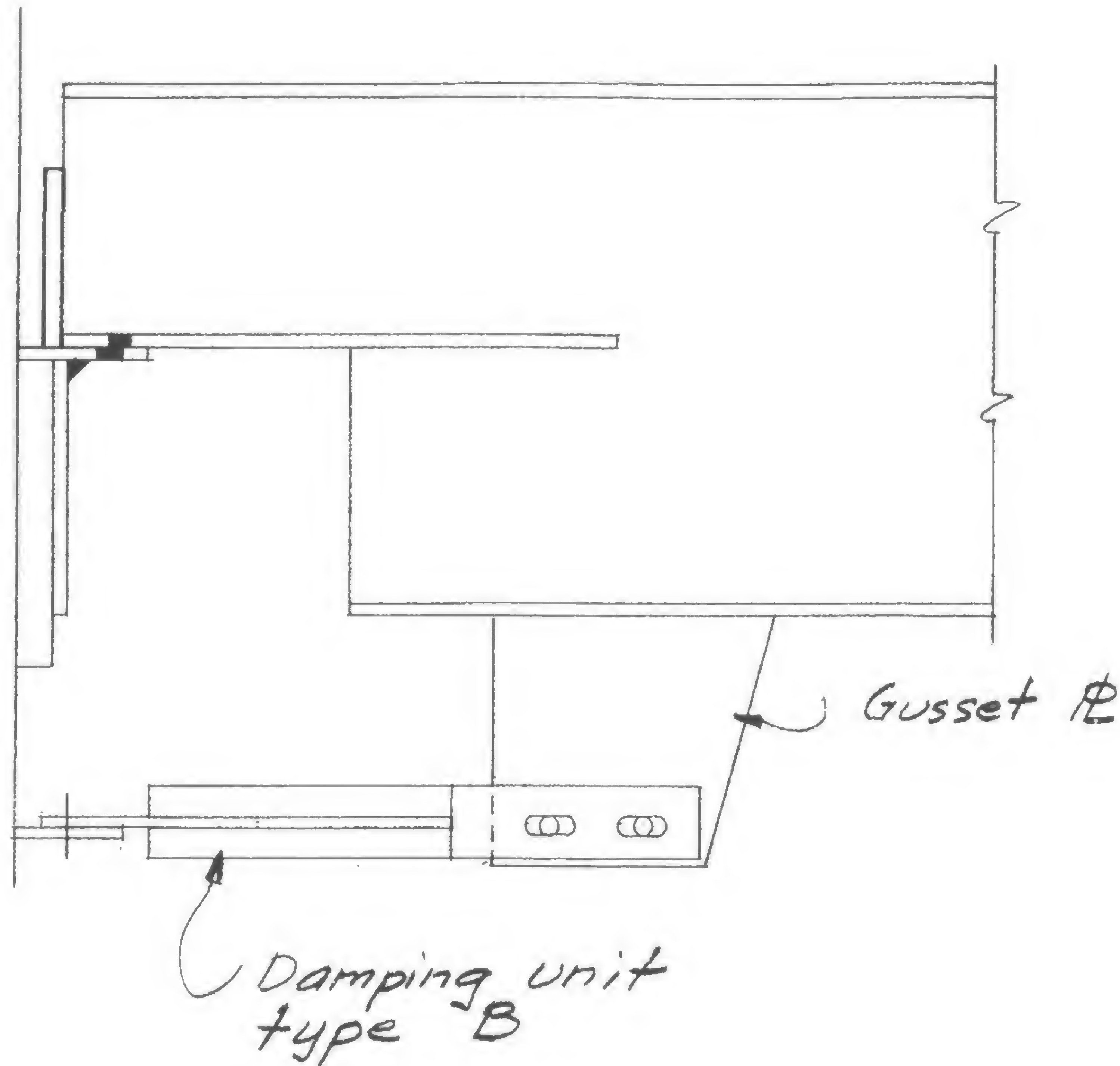


PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL-DAMPER CONN. REPAIR-FL 7&amp;9

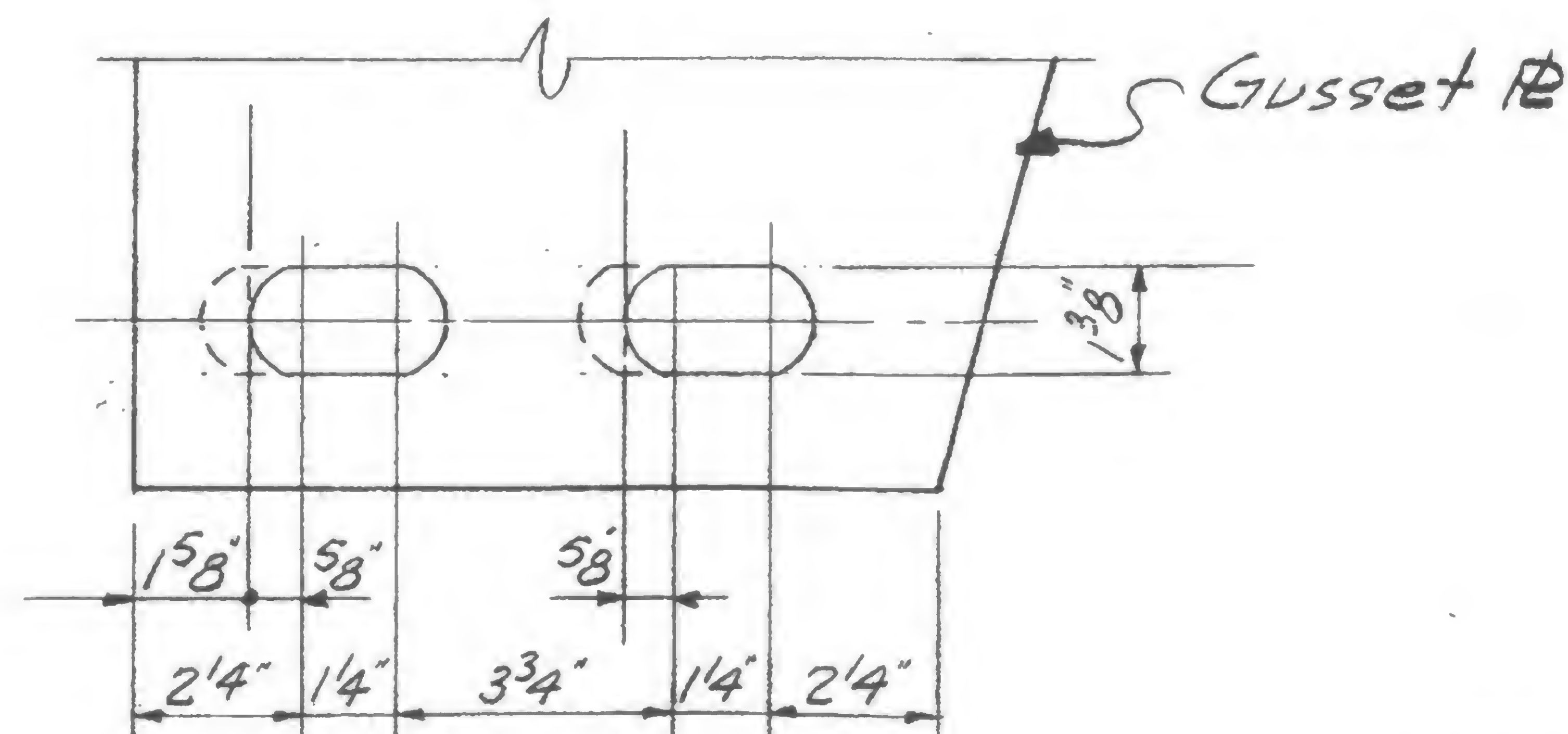
DATE 8/20/69

## REVISIONS

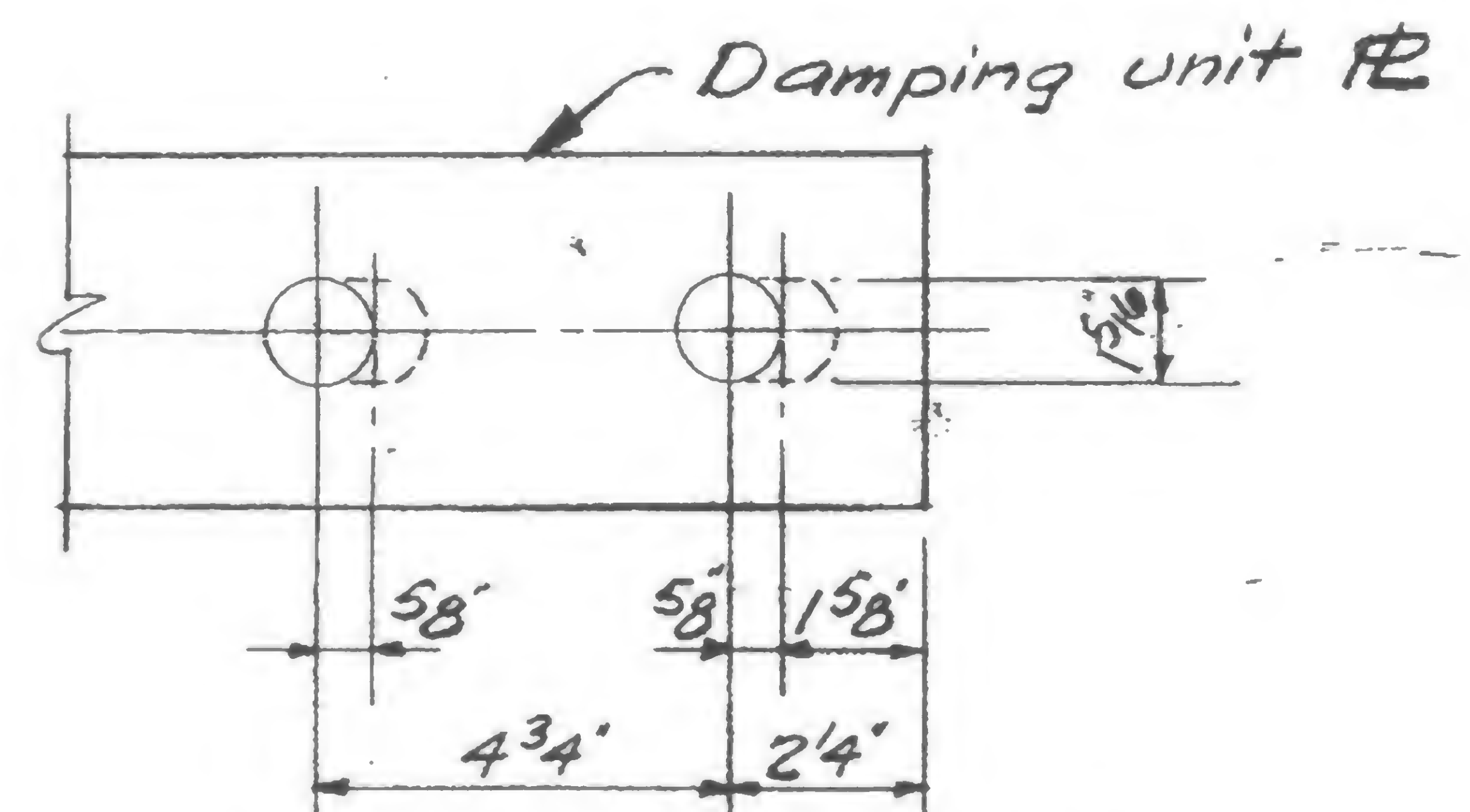


## NOTES:

1. Bolt holes may be reamed to accommodate mis-matched holes providing that edge distances are maintained as shown in Detail 1 & 2.
2. Where edge distances cannot be maintained Contractor may rectify the deficiency by plug welding and by re-reaming.



Max. reaming of slots Detail 1



Max. reaming of holes Detail 2

Provide thickened washers per specs.

DESIGNED  
H. RoetDRAWN  
A. FRANQUI

REVIEWED

19-AB-958

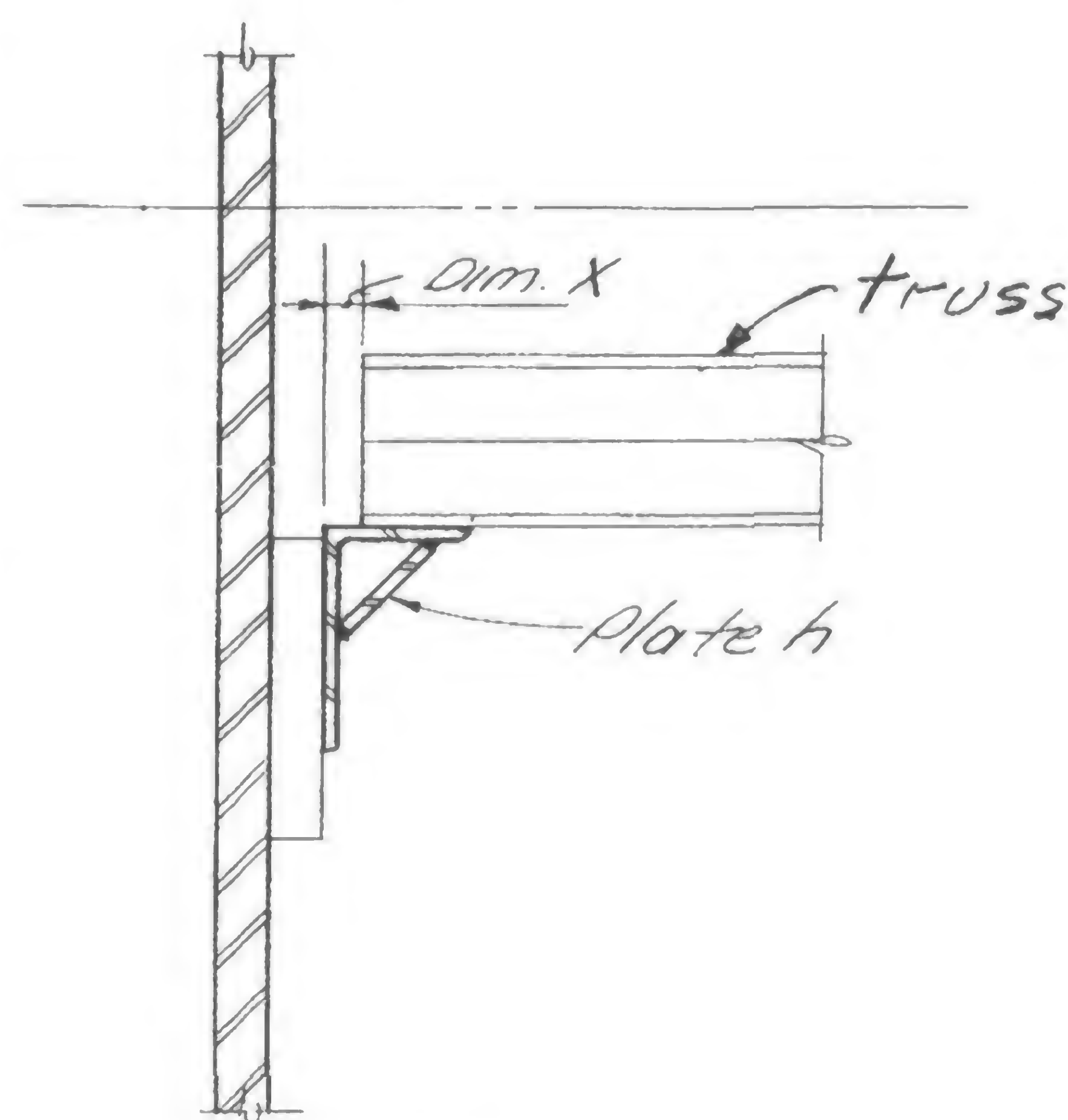


PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - TRUSS SEAT REPAIR

DATE 9/2/69

## REVISIONS

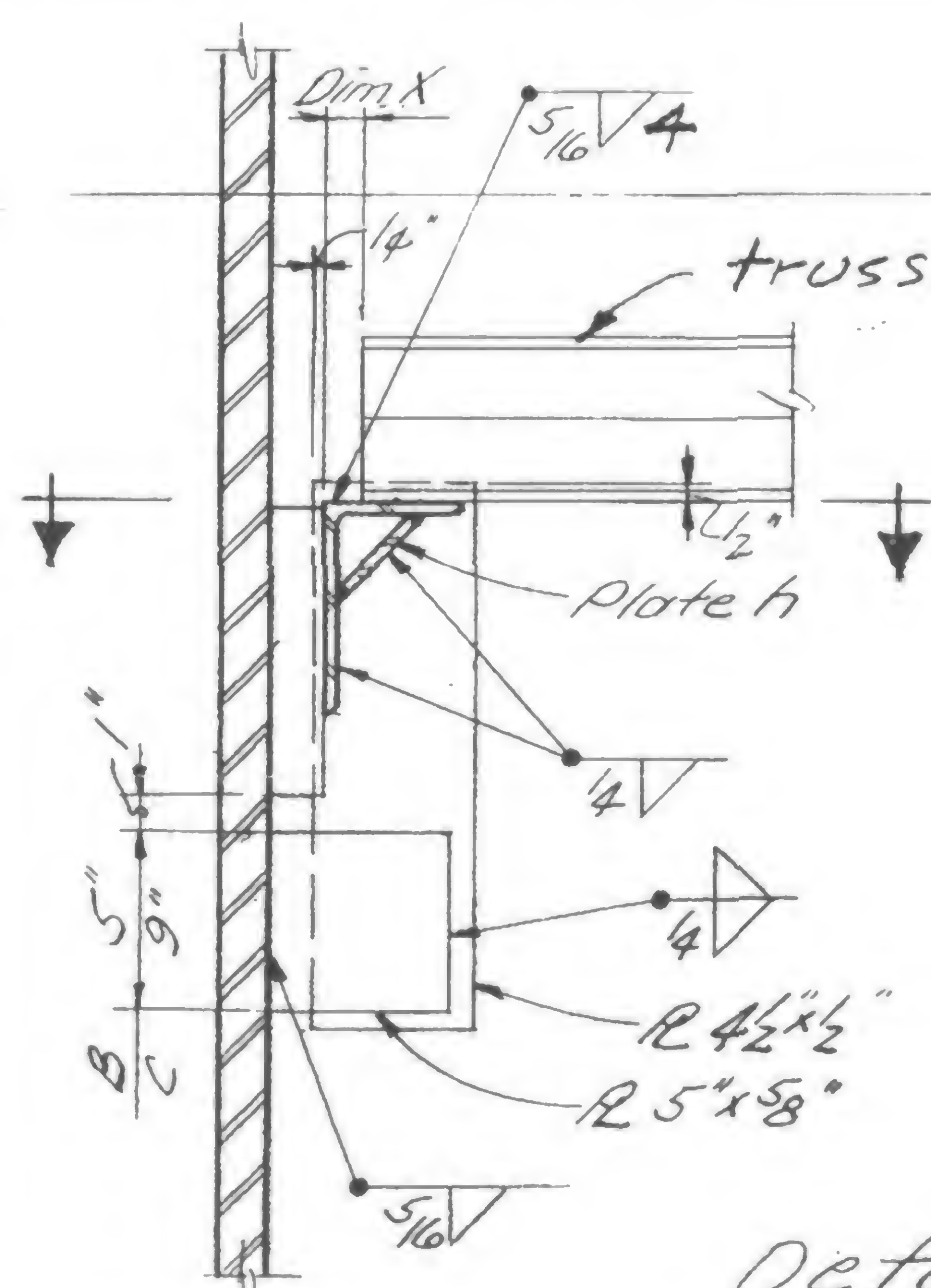


Detail A

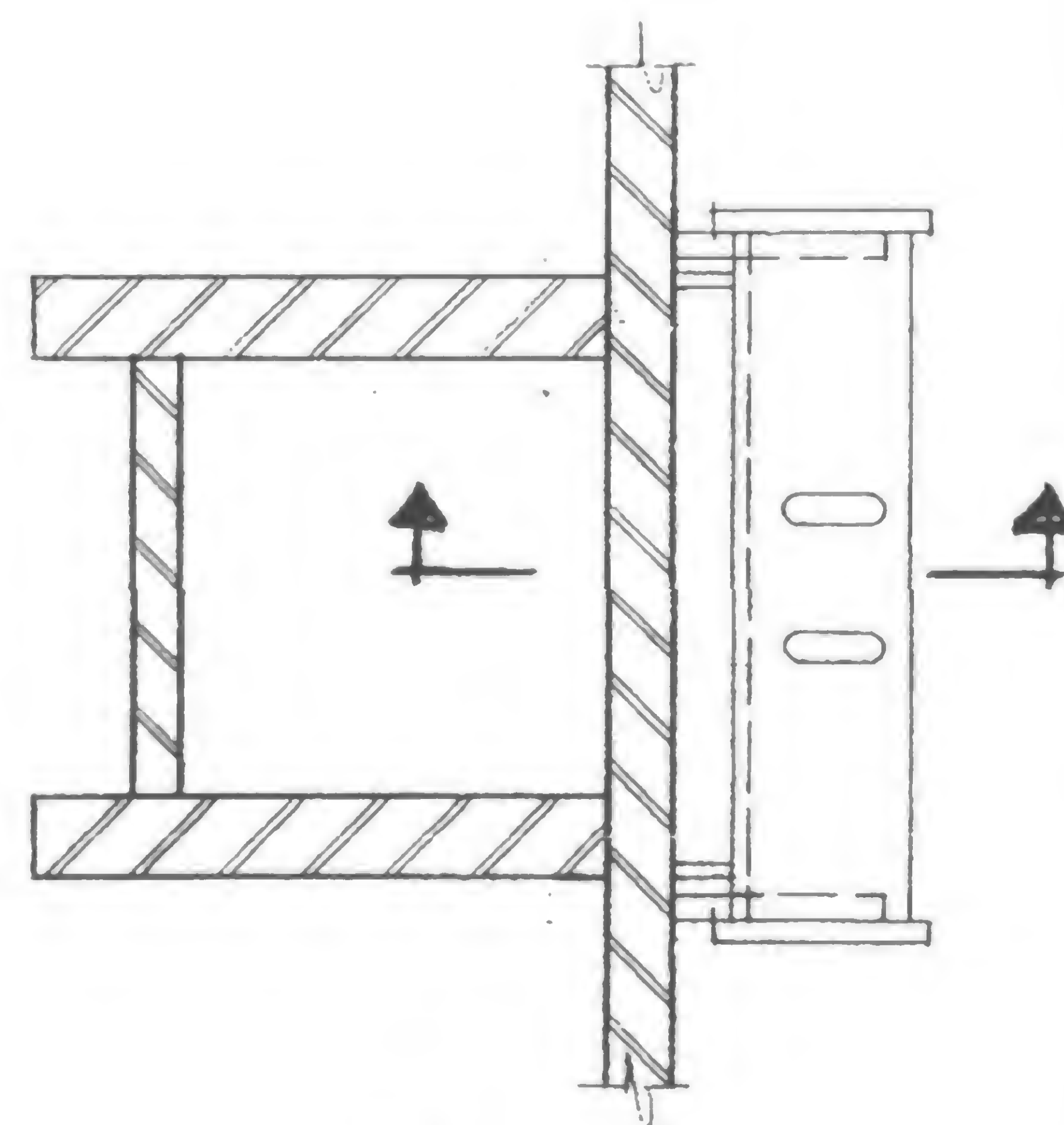
## SCHEDULE OF REPAIR DETAIL

DIM. X	FLOORS					
	10-40	44	45-48	49-74	78	79-106
To 1/16"	None	None	None	None	None	None
1/8" to 1/2"	A	A	A	A	B	A
9/16" to 1"	A	B	A	A	B	A
1 1/16" to 1 1/2"	A	B	A	B	B	B

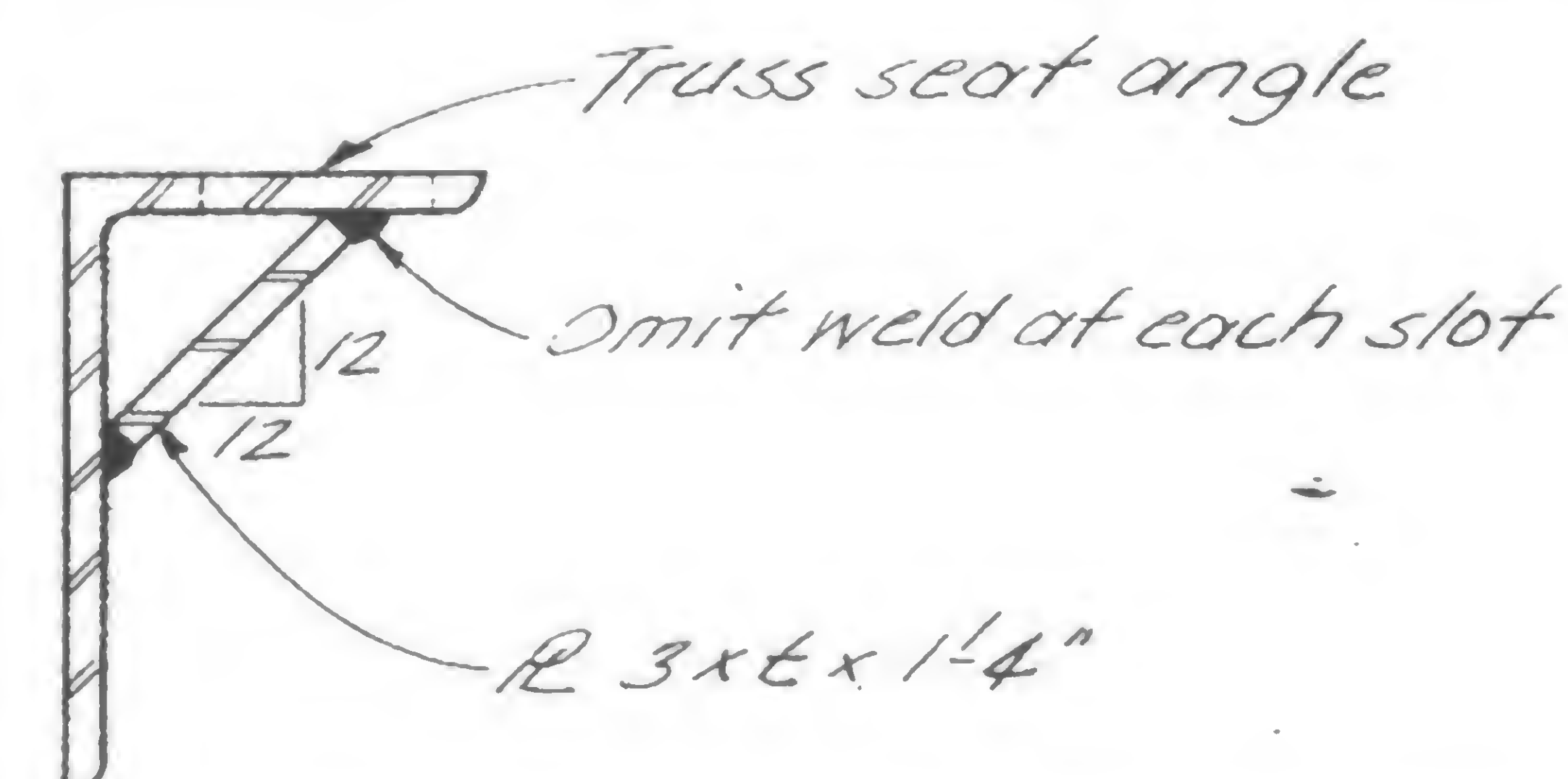
Note: Where repair is required, it is likely that damper connection will not mate. See 19-AB-960 for repair.



Section



Plan



Floors 10-40, 45-74, 79-106

$t = 5/16"$  typical, except

$t = 3/8"$  @ Cols. 111, 149, 217, 243, 311, 349, 417 & 443

Floors 44 & 78:

$t = 1/2"$  typical, except

$t = 5/8"$  @ Cols. 111, 149, 311 & 349

Detail of Plate h

Detail B

DESIGNED

H. Roet

DRAWN

J. Adams

REVIEWED

W. Brewer

19-AB-959





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

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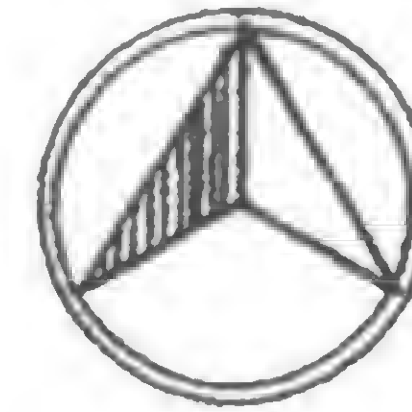
TITLE FLOOR 25 - TOWER A - STRUCTURAL REPAIR

DATE 10/31/69

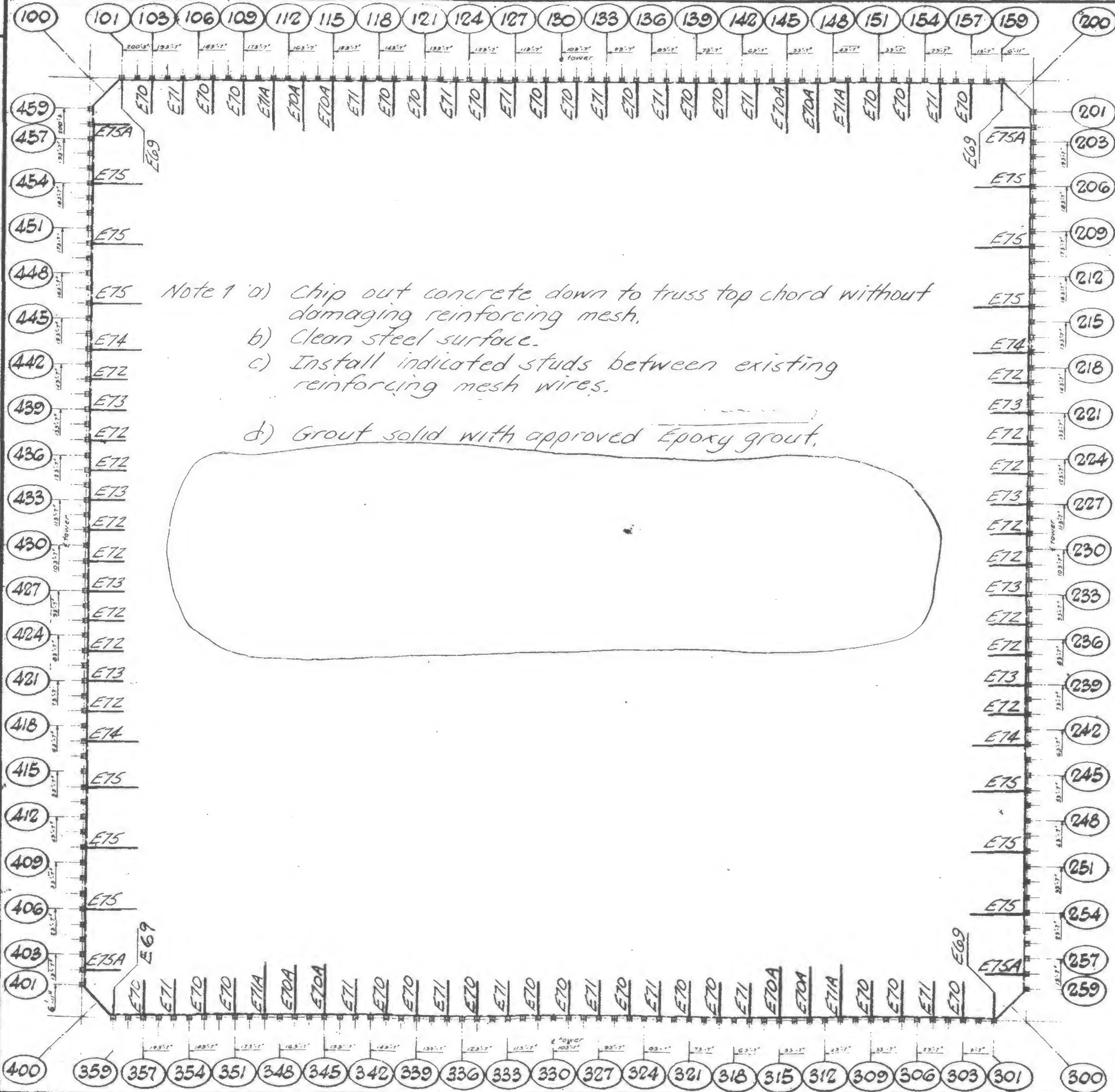
REVISIONS

12/1/69

NORTH



TOWER A



- Note 1
- chip out concrete down to truss top chord without damaging reinforcing mesh.
  - Clean steel surface.
  - Install indicated studs between existing reinforcing mesh wires.
  - Grout solid with approved Epoxy grout.

Det. Sch.	Det. Installed	Corrective Action
E69	E60	None
E70	None	None
E70A	None	E70AR
E71	None	None
E71A	None	E71AR
E72	None	None
E73	None	None
E74	None	E74R
E75	E68	E75R
E75A	E68A	None

DESIGNED

DRAWN

REVIEWED

J. Adams  
Q. Brewer

19-A-961.1



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

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TITLE FLOOR 25-TOWER A-STUD REPAIR

DATE 10/31/69

REVISIONS

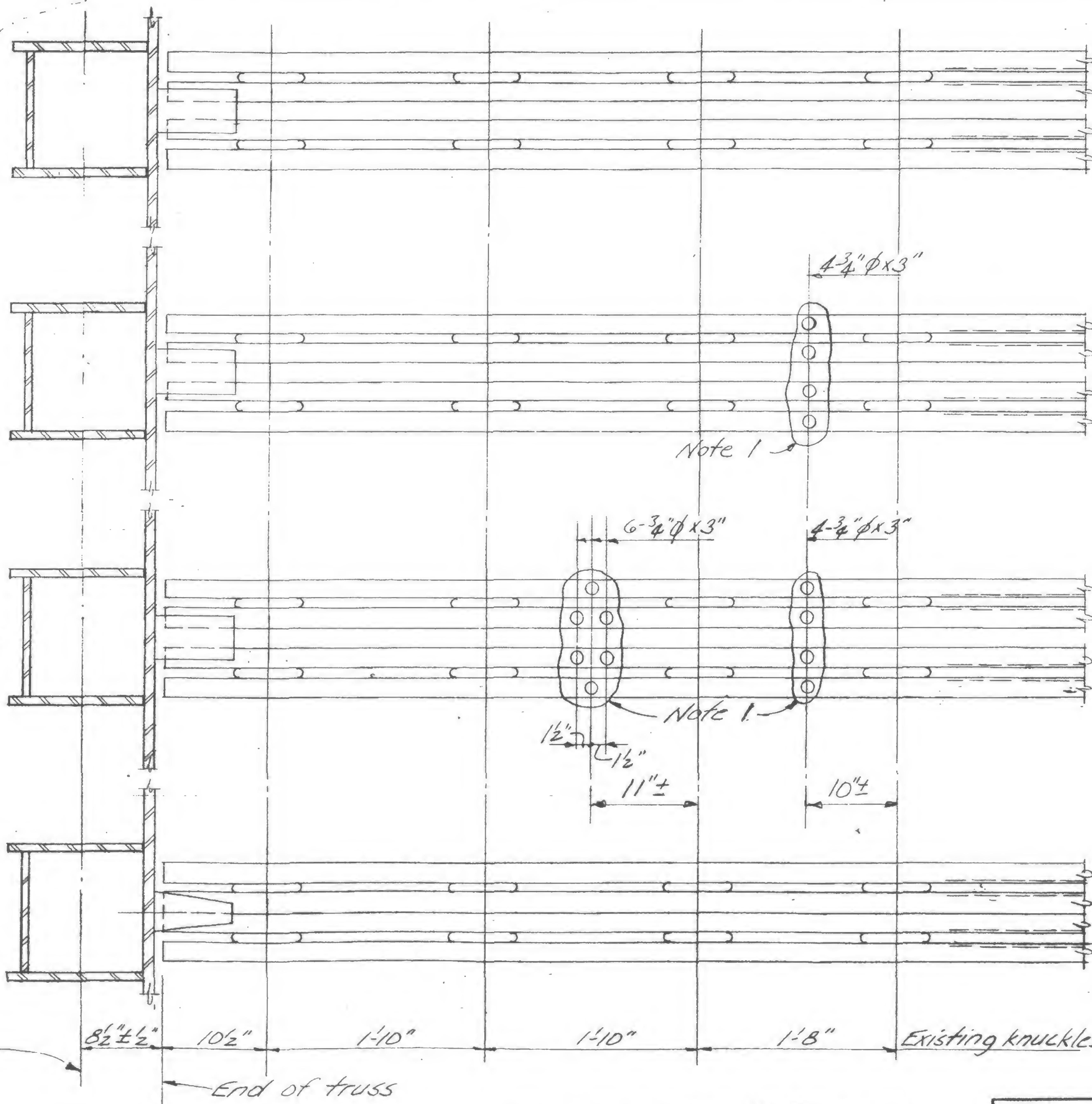
12/1/69

E70, E71

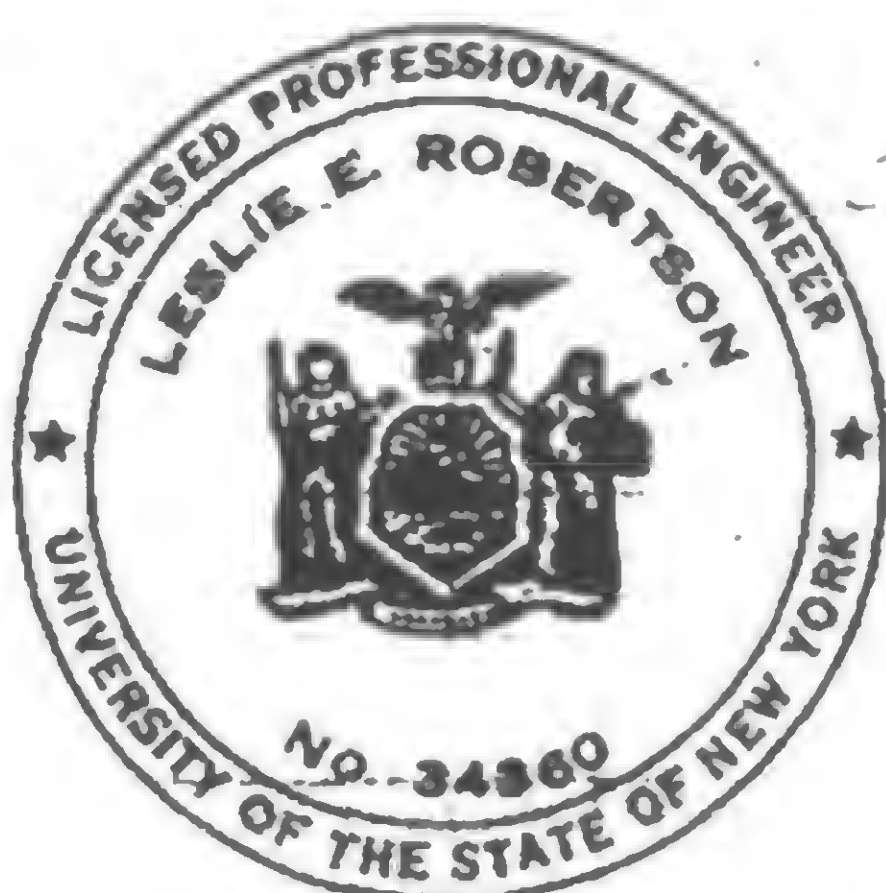
E70AR

E71AR, E74R

E72, E73



Ext. col.  
ref. line



DESIGNED

DRAWN

J. Adams

REVIEWED

W. Brewer

For Note 1, see 19-A-961.1

19-A-961.2





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

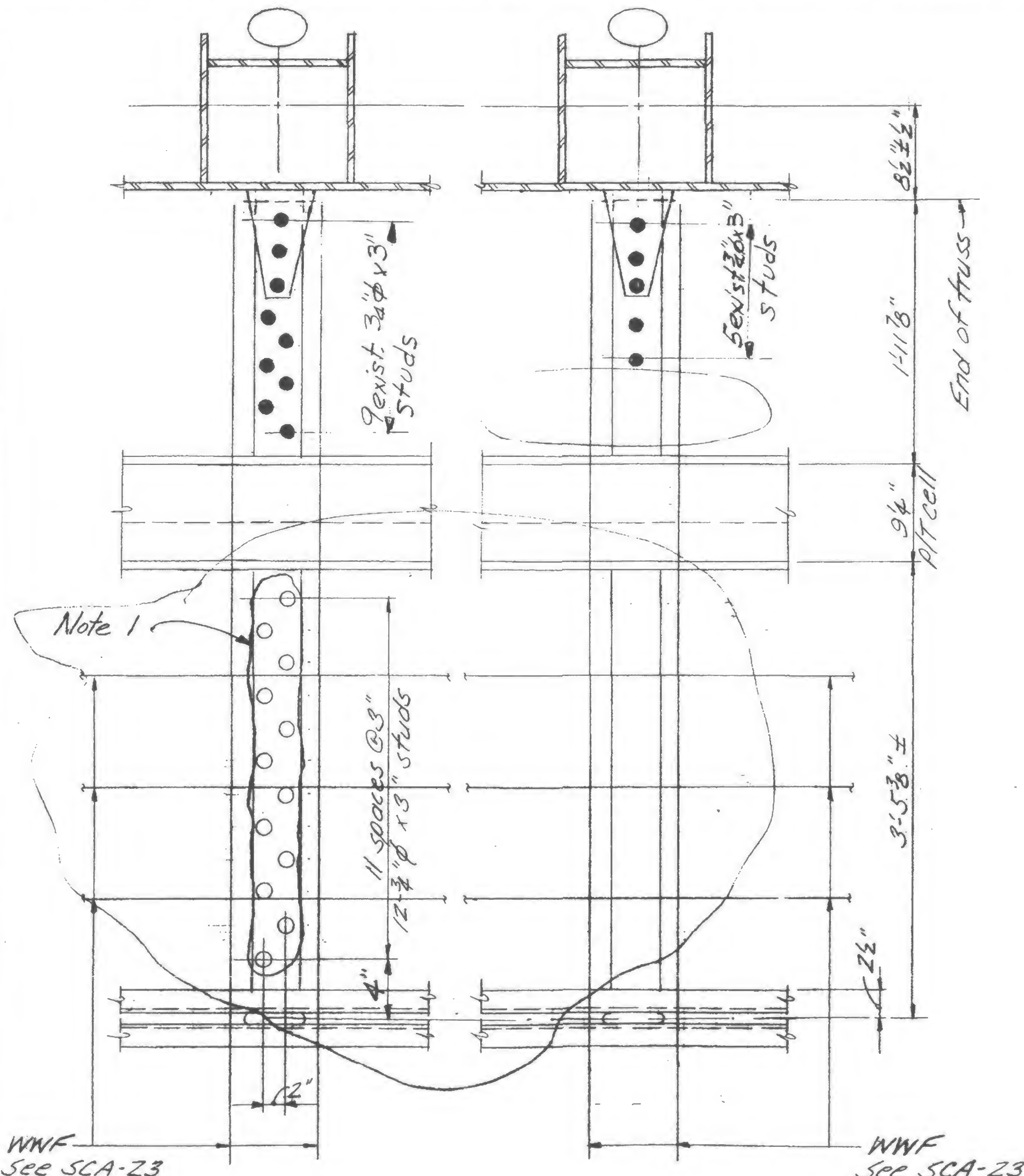
PROJECT THE WORLD TRADE CENTER

TITLE FLOOR 25 - TOWER A - STUD REPAIR

DATE 10/31/69

REVISIONS

12/1/69



DESIGNED

DRAWN J. Adams

REVIEWED W. Brewer

E75R

E75A

For note 1, see 19-A-961.1

19-A-961.3





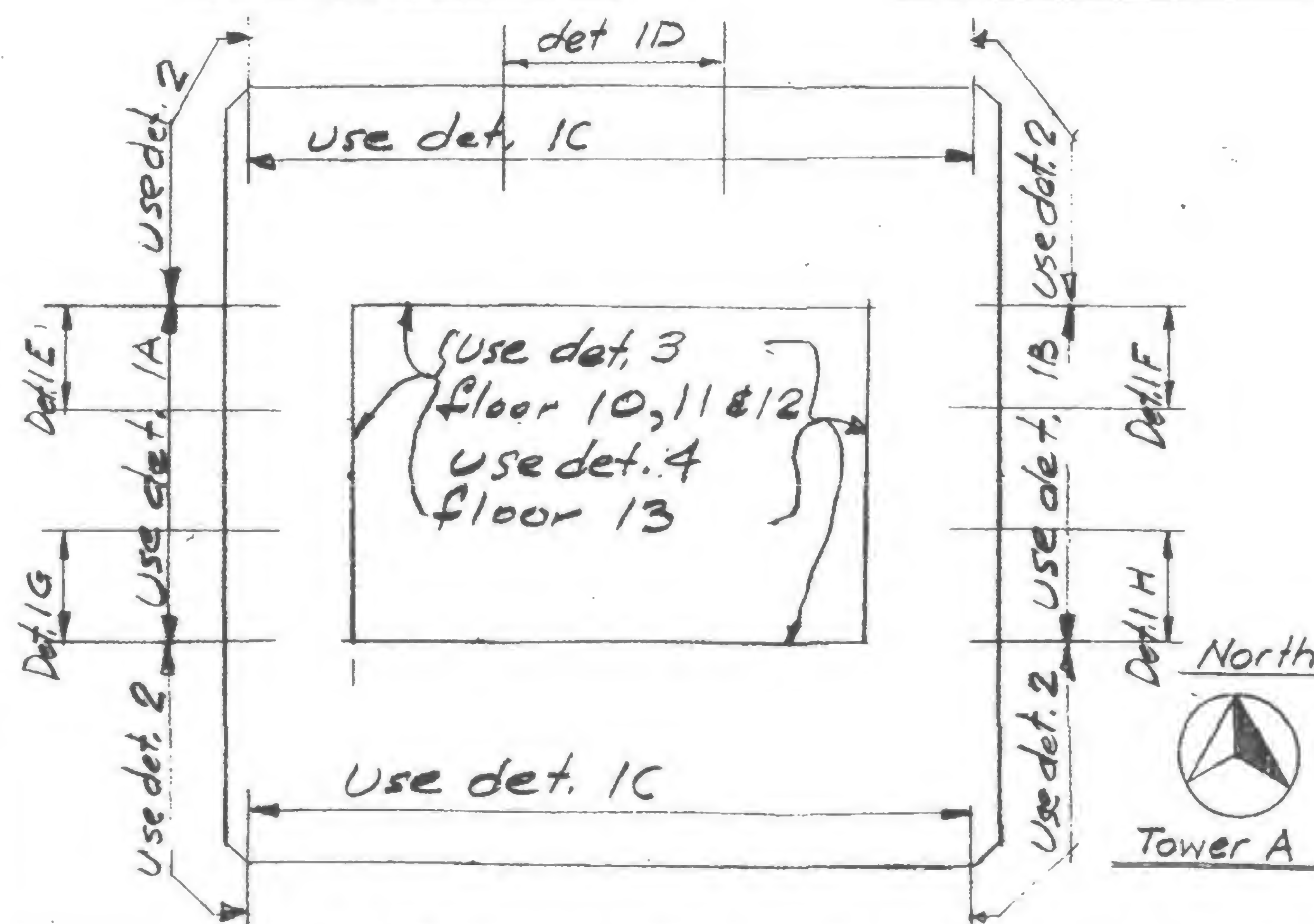
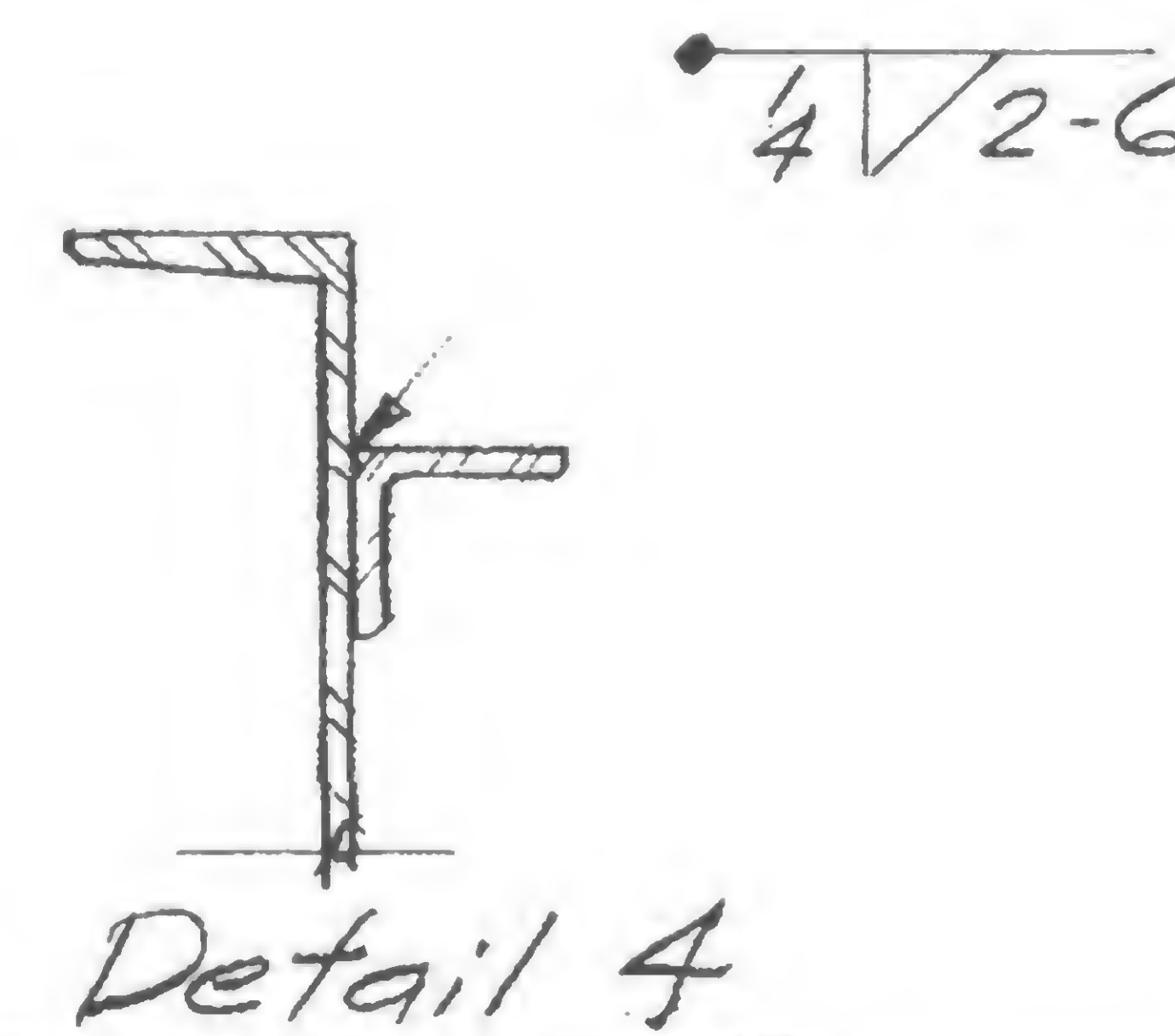
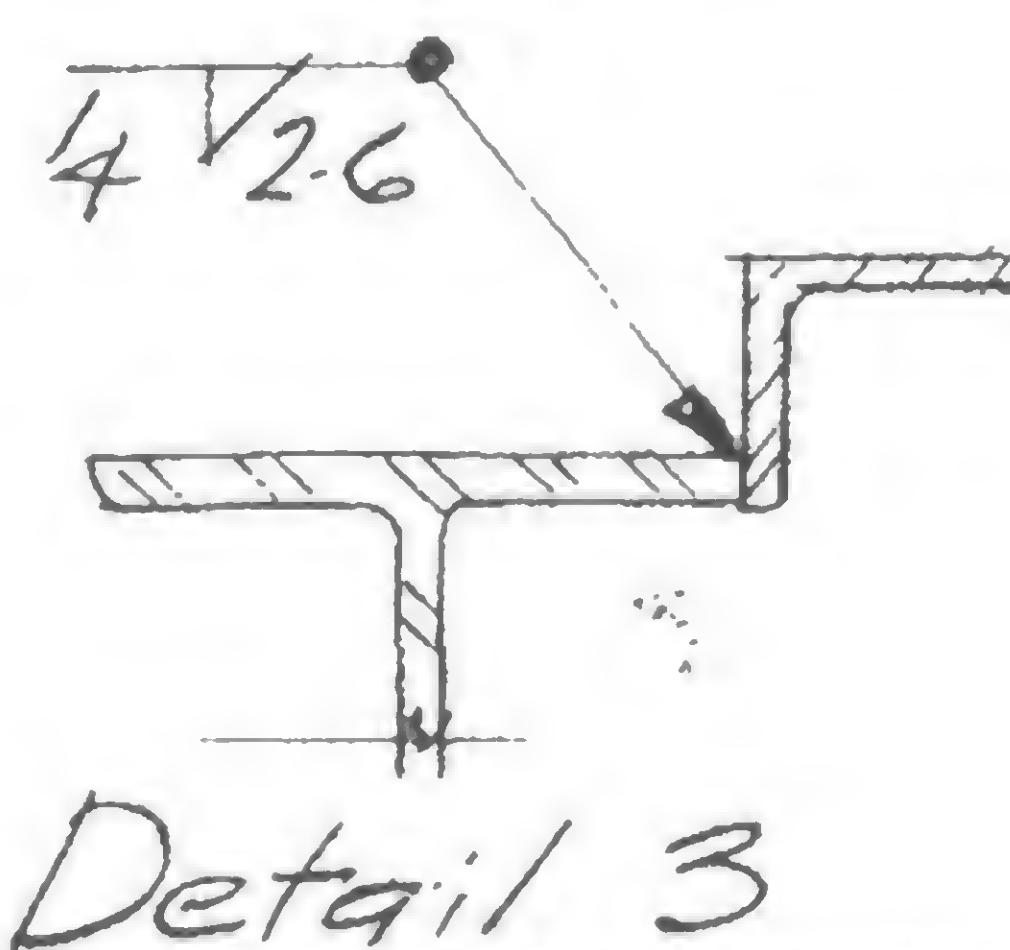
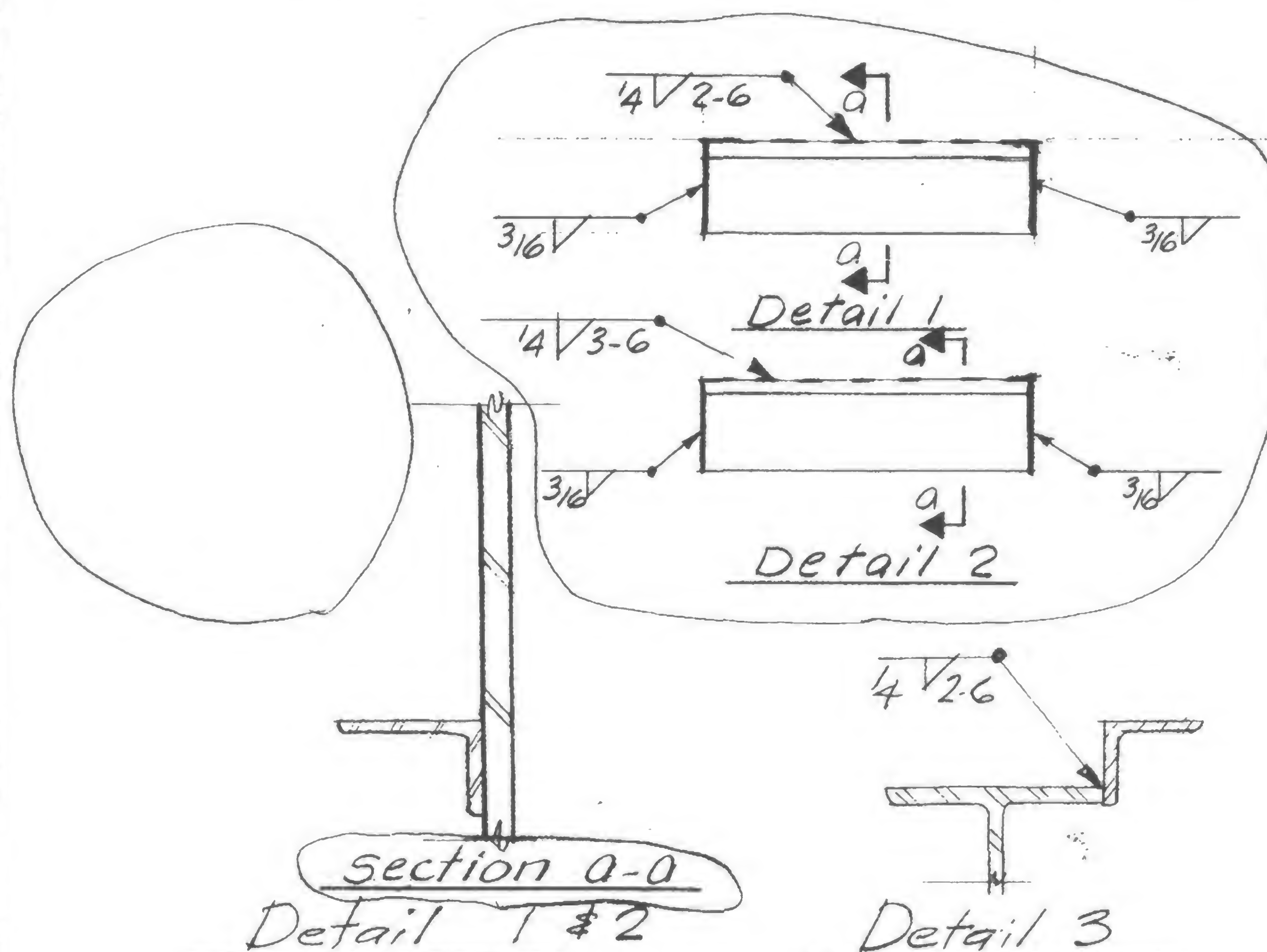
PROJECT **THE WORLD TRADE CENTER**TITLE **MODIFIED DECK SHELF ANGLE WELDING**DATE **3-24-70**

## REVISIONS

7-20-70

7-27-70

Note: Detail 1A thru 1H indicate various extents of field weld  
Detail 1 for floors indicated in Schedule.



SCHEDULE OF FLOORS		
DETAIL	TOWER A	TOWER B
1A, 1B, 1C, 2	—	9
1A, 1B, 1C, 2, 3	—	10-12
1A, 1B, 1C, 2, 4	—	13
1A, 1B, 1C, 2	—	41-43
1A, 1B, 1D	—	44
1B, 1D, 1G	—	45
1G, 1H	—	46-49
1A, 1B, 1C, 2	75-77	75-77
1A, 1B	78	78
1B, 1E	79	79
1E, 1F	80-83	80-83
1A, 1B, 1C, 2	107	107

DESIGNED

DRAWN

REVIEWED

19-AB-962



PROJECT THE WORLD TRADE CENTER

TITLE MODIFICATION TO BEAM OPENINGS

DATE 4/28/70

## REVISIONS

# col. 503

Tower B  
Fl. 11 & Fl. 12

5"

# col. 504

2'-0"

Field cut  
elongation of  
18"  $\phi$  hole as shown

30 WF

115'-8"

# exist. 18"  $\phi$  hole

# col. 1005

5"

Tower B  
Fl. 11 & Fl. 12

# col. 1006

2'-0"

Field cut elongation  
of 18"  $\phi$  hole as shown

30 WF

88'-10"

# exist. 18"  $\phi$  hole

DESIGNED

DRAWN

REVIEWED

19-B-965



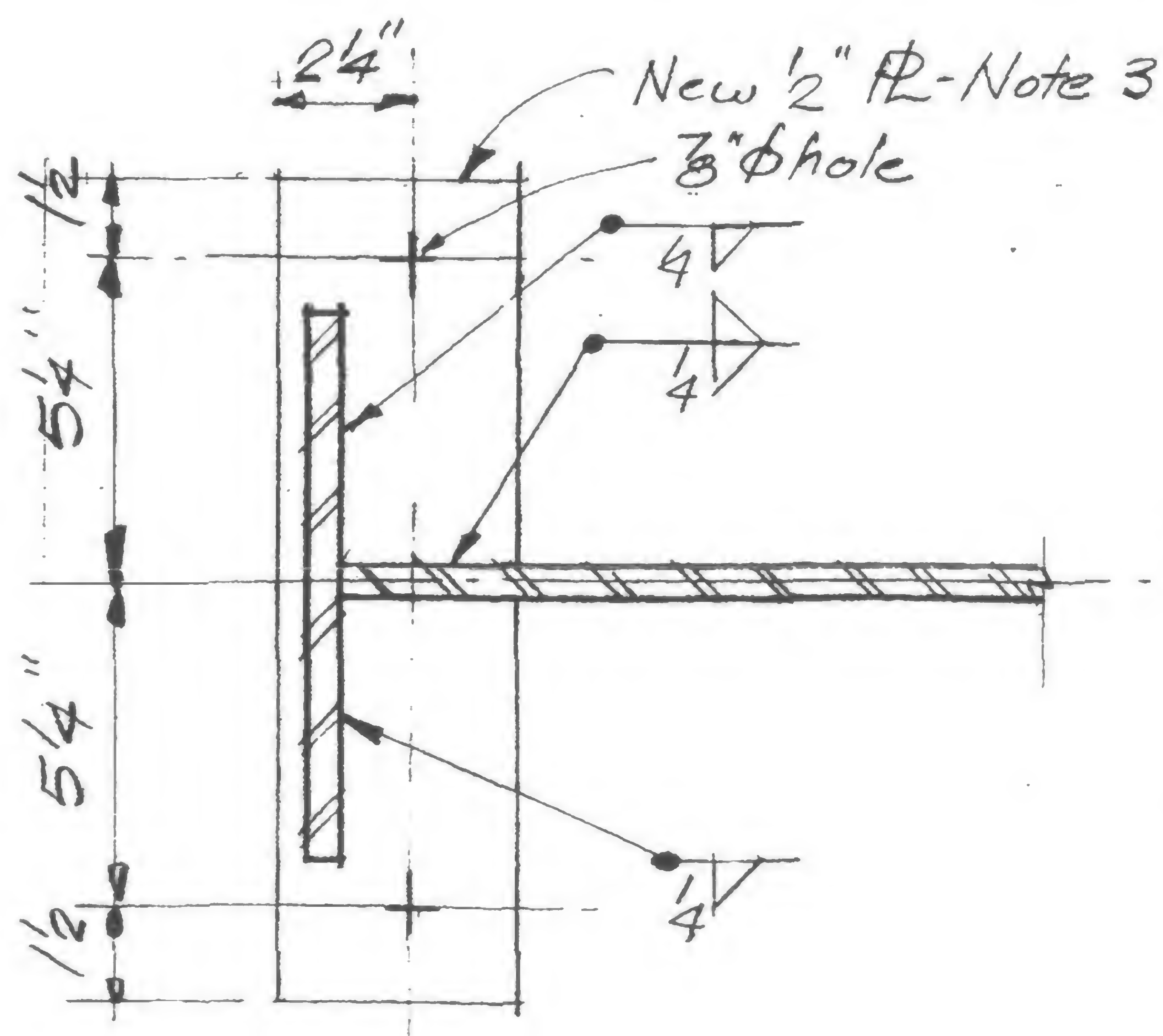
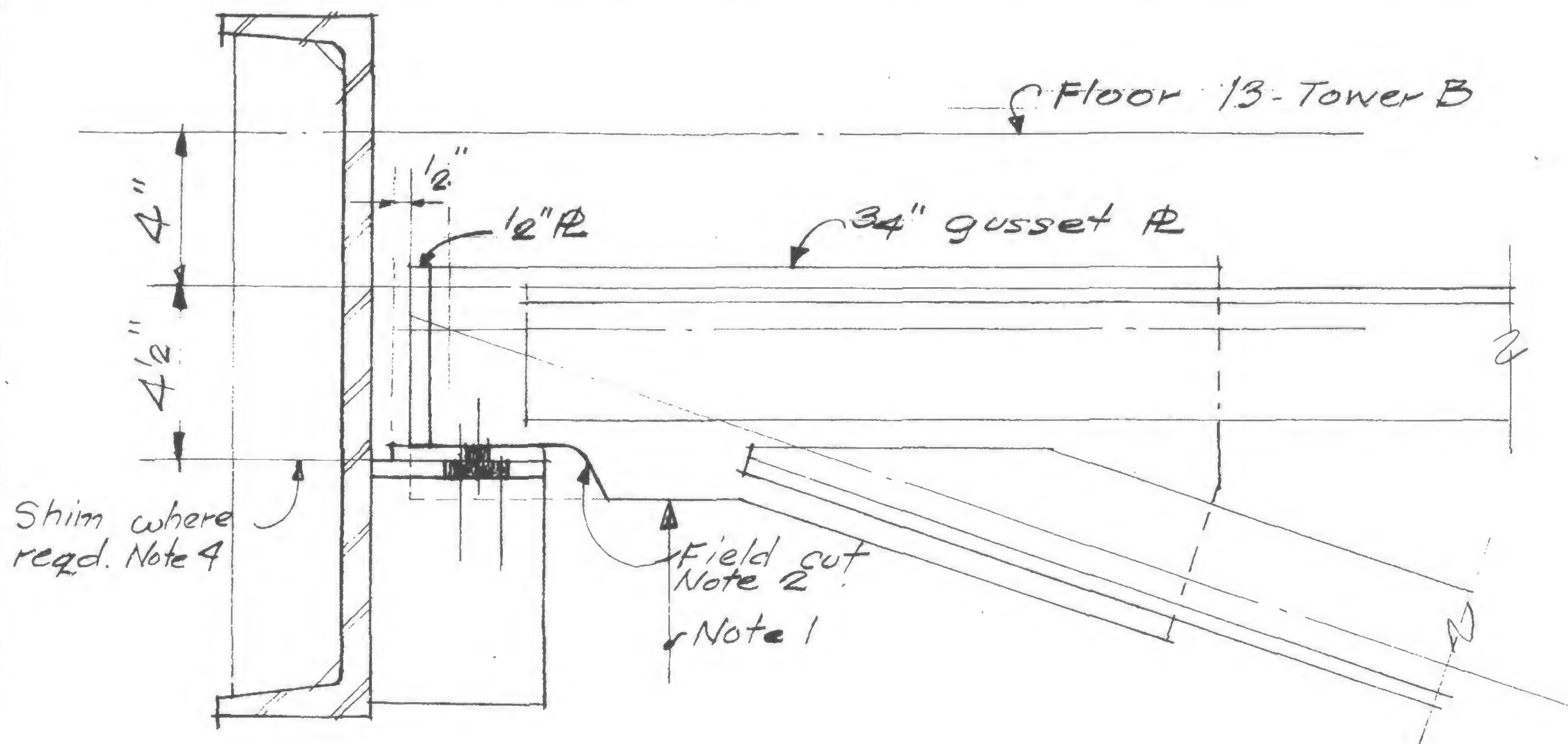


PROJECT THE WORLD TRADE CENTER

TITLE FLOOR TRUSS DETAIL 10.8 - REPAIR

DATE 5/11/70

## REVISIONS



1. Shore truss for 5 kips.
2. Cut 3/4" gusset PL of truss and 1/2" end PL of truss as shown.
3. Provide new 1/2" PL and weld as shown.
4. Provide shim stock as required.
5. Lower truss end 1/2".

Ref. dwg. 7-B8-10.8

19-B-966



DESIGNED

DRAWN

REVIEWED



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

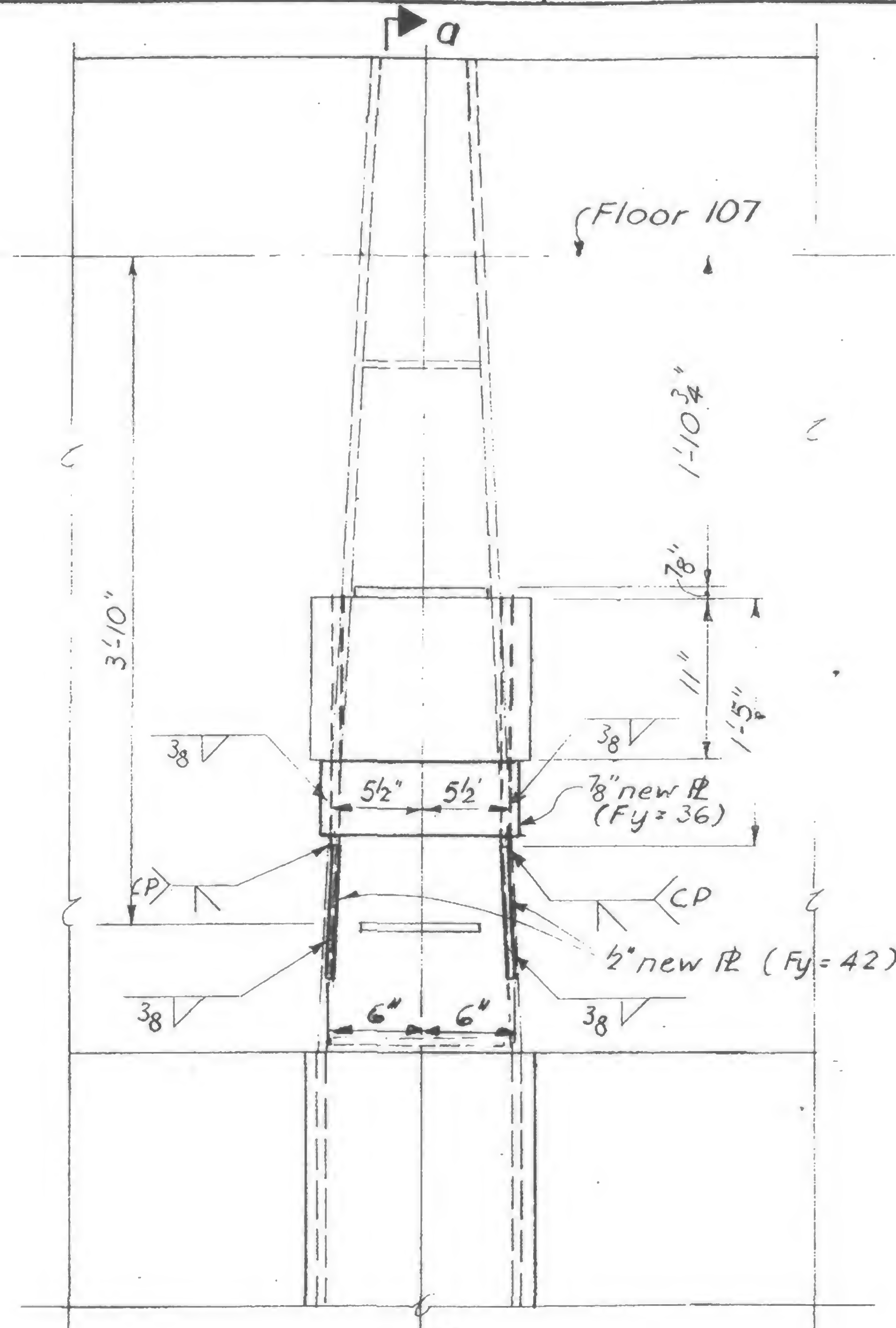
Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER*

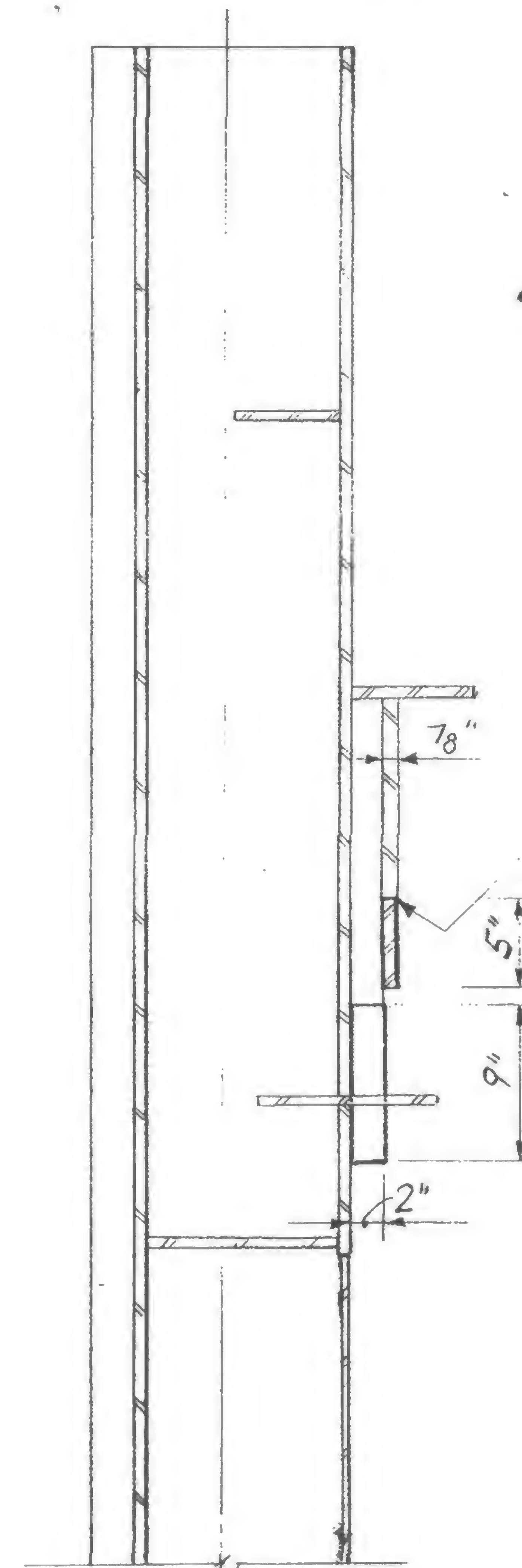
TITLE *FL. 107 BEAM SEAT REINFORCING*

DATE *6-17-70*

REVISIONS



327  
333



*Section a-a*

*Beam Seat Reinforcing  
Floor 107, Tower A  
Columns 327, 333*



DESIGNED

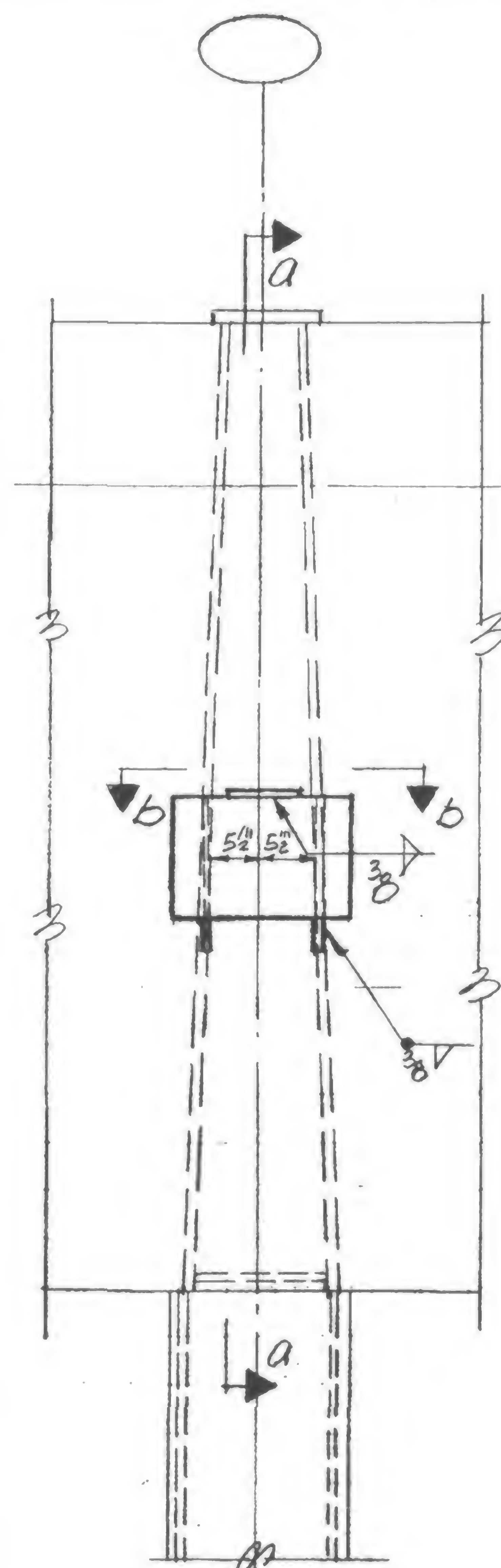
DRAWN  
*F. Smith*

REVIEWED

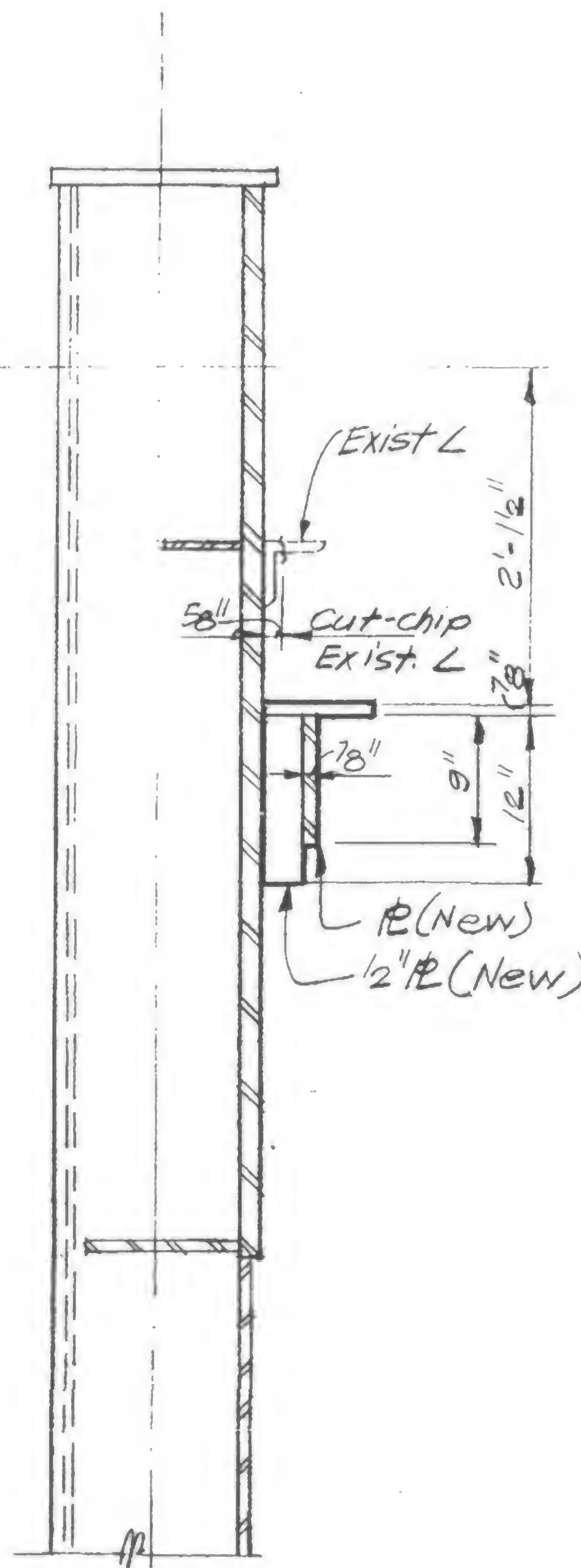
19-A-967



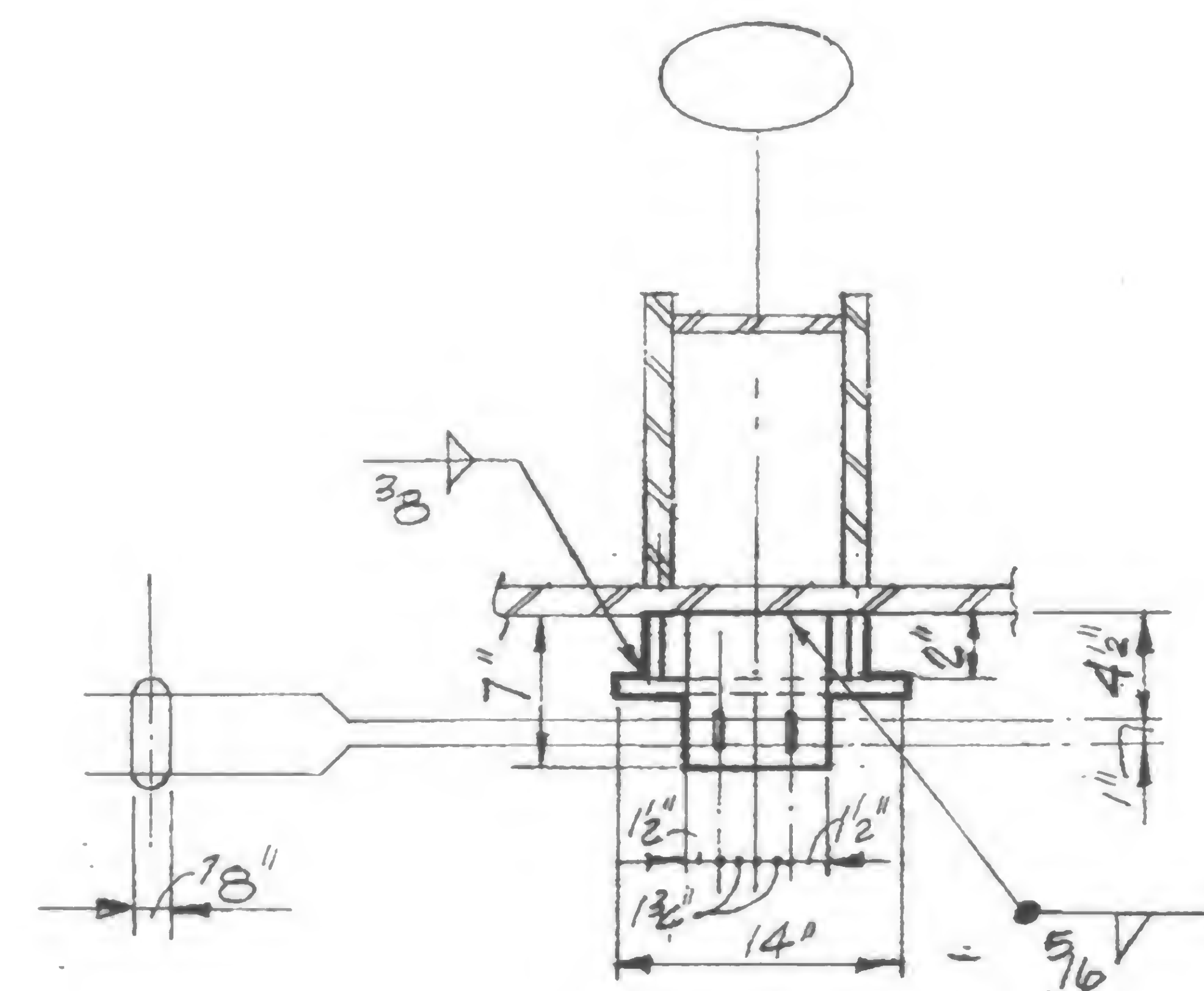
REVISIONS



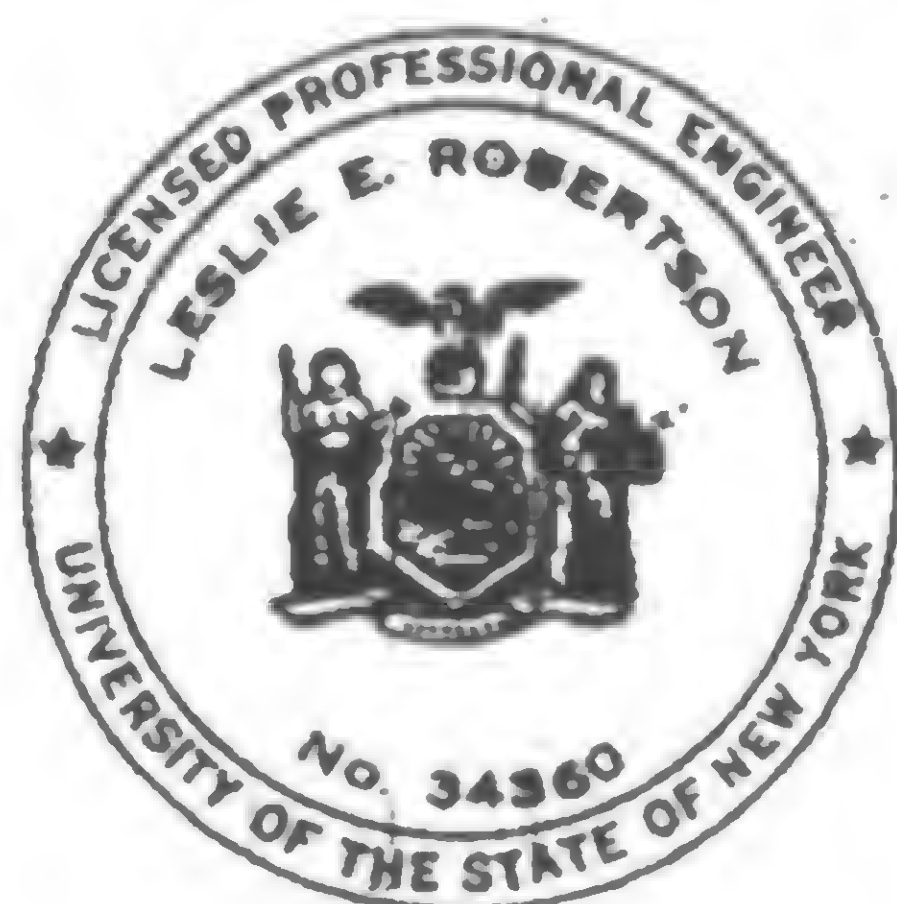
Elevation  
Col. 212 & 412



Section a-a



Section b-b



DESIGNED

DRAWN

P. Orsini

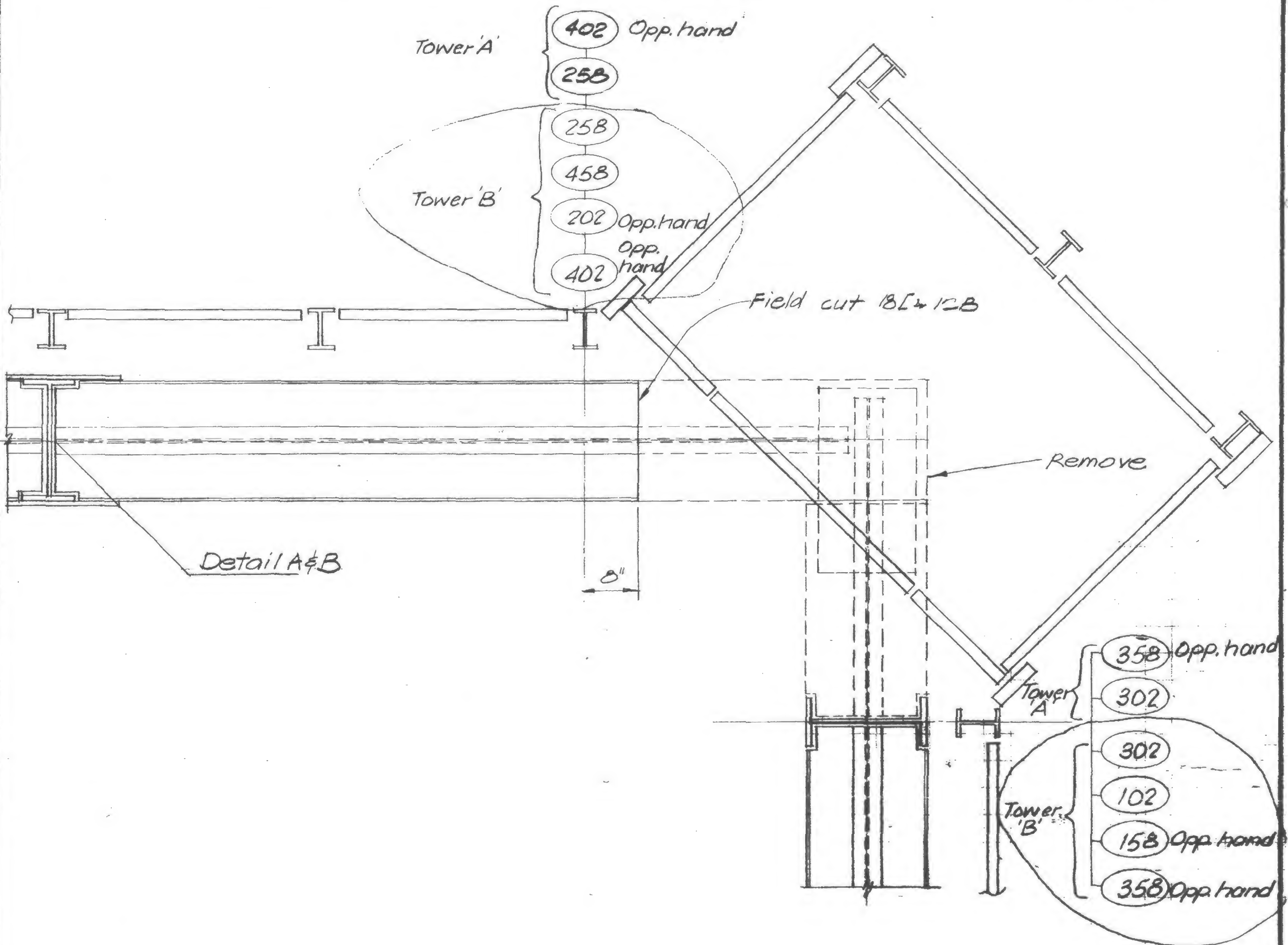
REVIEWED

19-B-968



REVISIONS

9-29-72



DESIGNED

DRAWN  
P. Orski

REVIEWED

19AB969.1



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT **THE WORLD TRADE CENTER** TITLE **LOLLIER SUPPORTS - AL 48**

DATE **8-7-70**

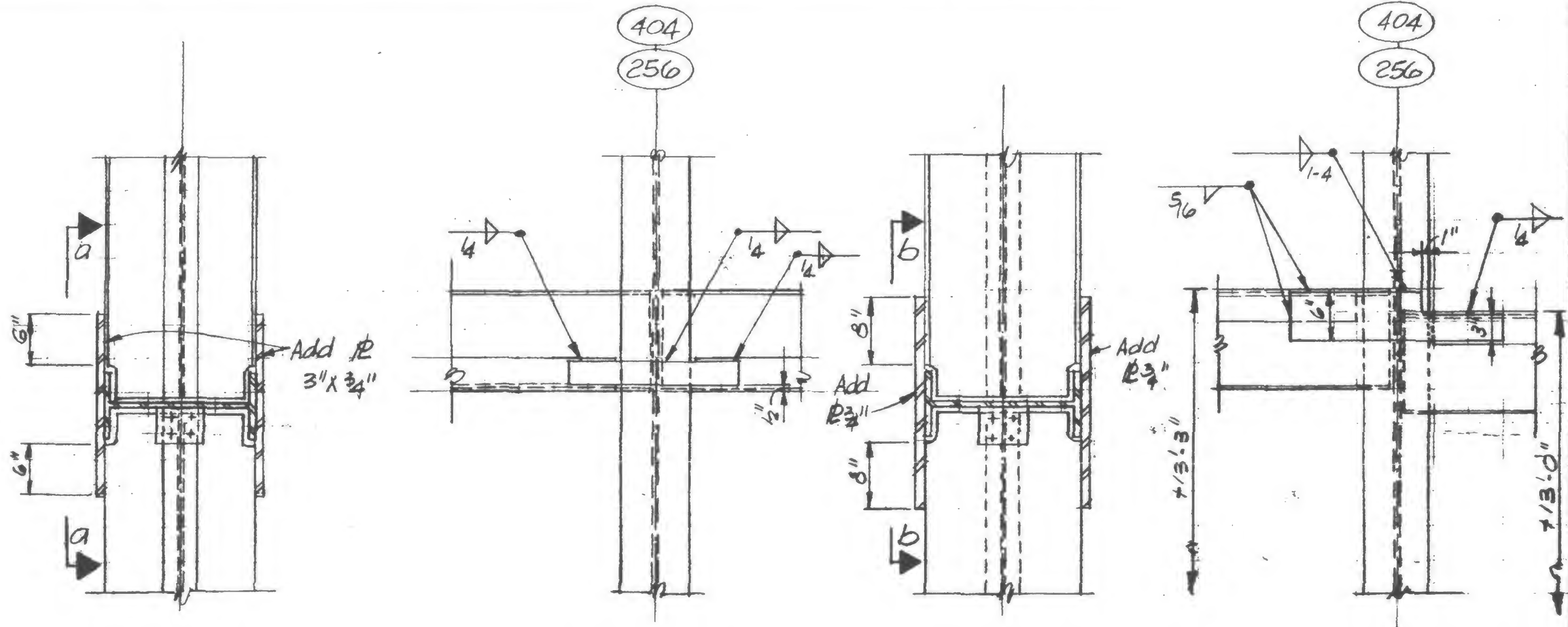
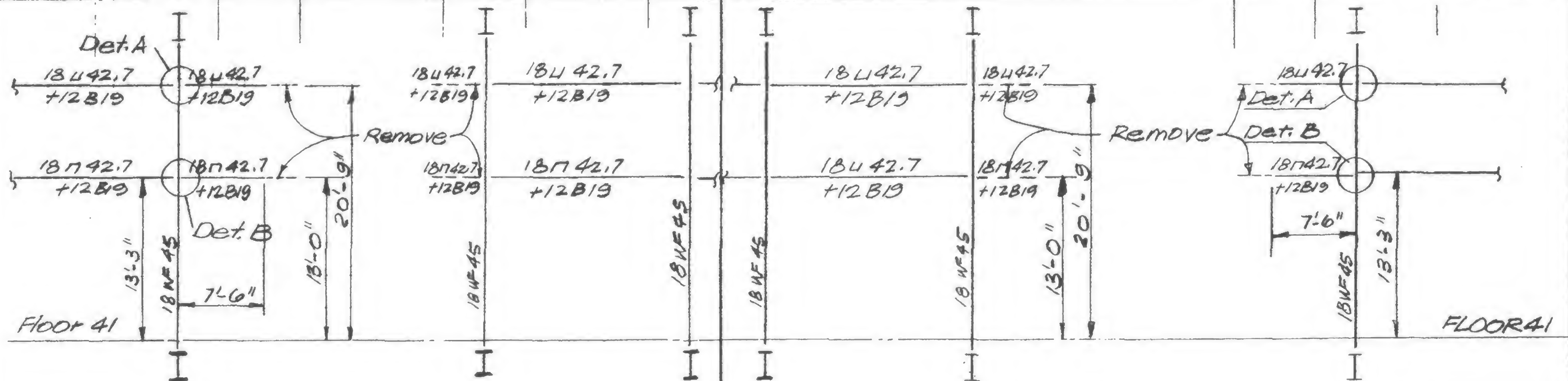
REVISIONS

9-29-72

(454) (457) (459) Tower B 101 (103) (106) (154) (157) (159) Tower B (201) (203) (206)  
(254) (257) (259) Tower A 301 (303) (306) (354) (357) (359) Tower A & B (401) (403) (406)

FLOOR 43

FLOOR 43



Detail A

Section a-a

Detail B

Section b-b

19-AB969.2



DESIGNED

DRAWN

P. Orski

REVIEWED





PROJECT THE WORLD TRADE CENTER

TITLE REPAIR OPENING FLOOR 7 - TOWER A-ALT.#1

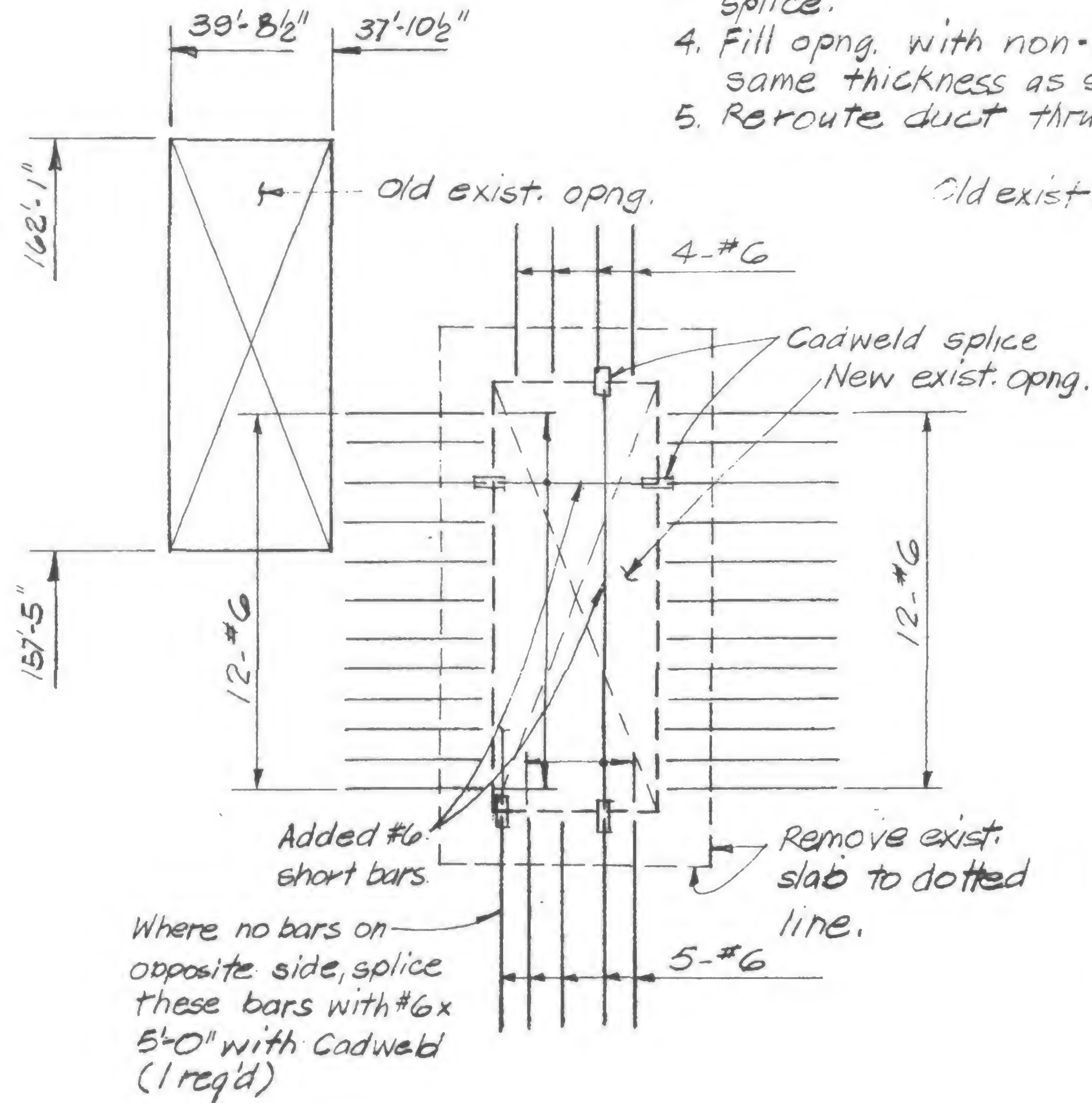
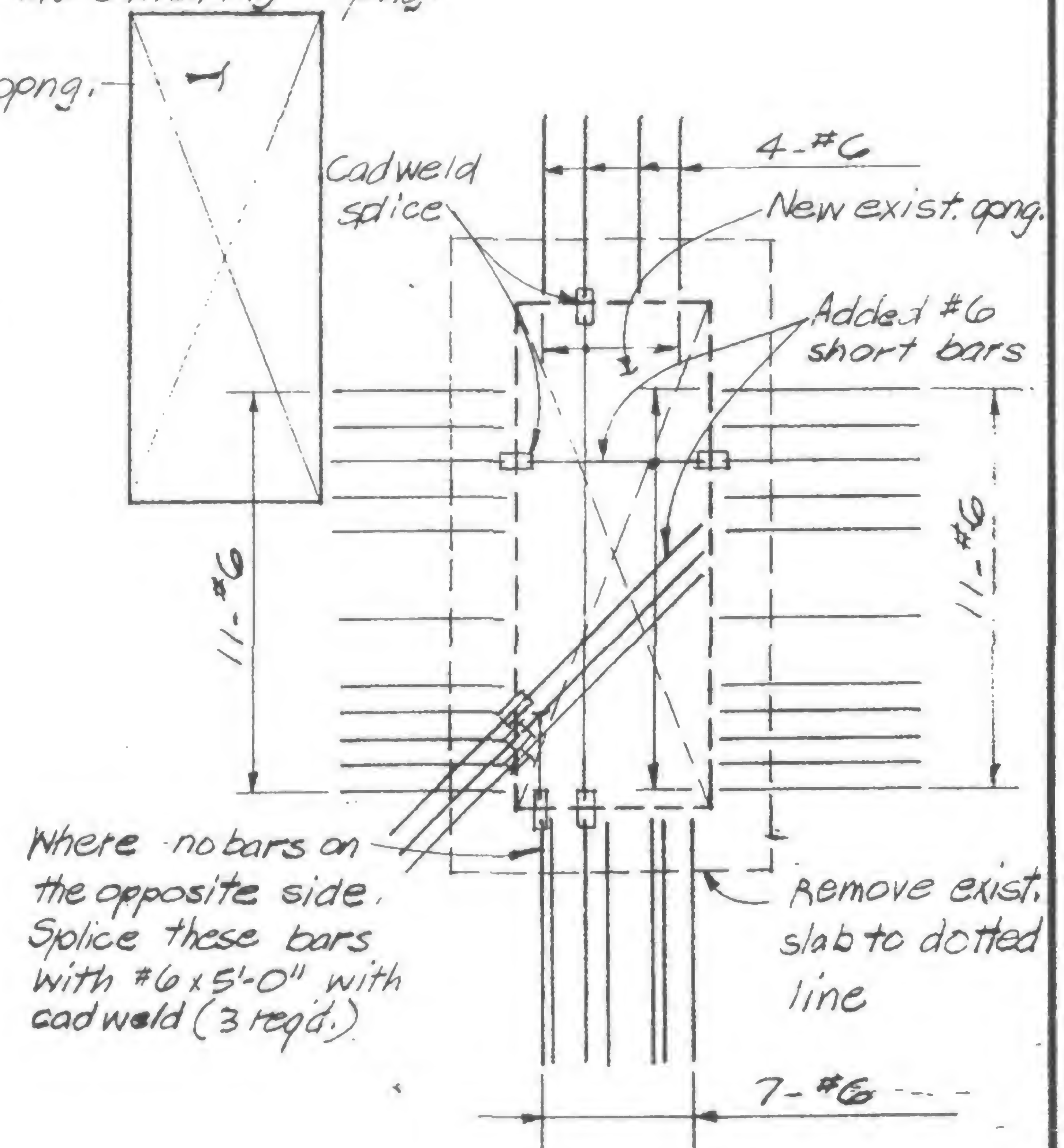
DATE 8-7-70

## REVISIONS

Procedure:

(or more if req'd.)

1. Remove 7" of slab along the dotted lines with rough surface to expose the existing bars 6" min.
2. Provide #6 short bars spanning btw. existing opposite reinf. on each side of opng. (Field measure length of each bar)
3. Splice all Top, bottom & diag. bars as shown with T-series Coldweld splice.
4. Fill opng. with non-shrinkage concrete ( $f_c = 4000 \text{ psi}$ , same thickness as slab).
5. Reroute duct thru old existing opng.

Top barsBottom bars

DESIGNED

DRAWN  
A. FRANQUI

REVIEWED

19-A-970.1



PROJECT

THE WORLD TRADE CENTER

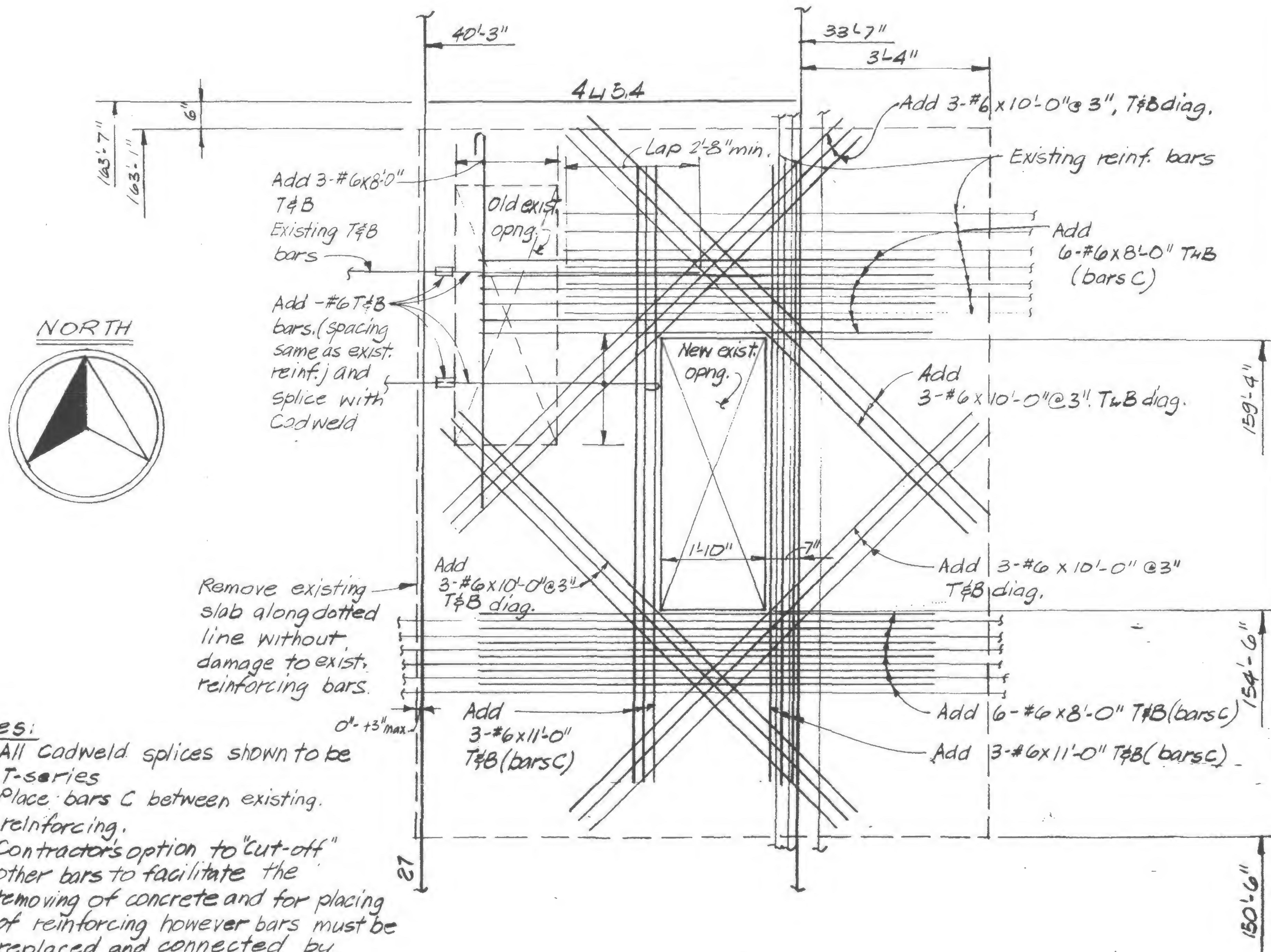
TITLE

REPAIR OPENING FLOOR 7-TOWER A - ALT.#2

DATE

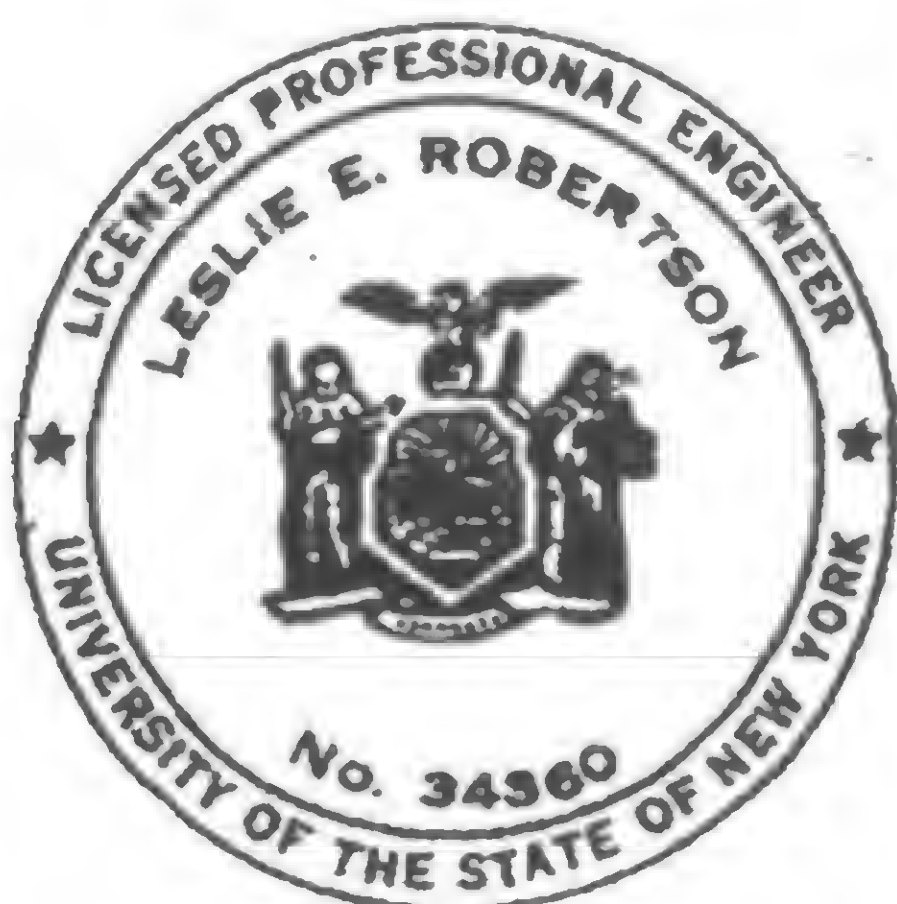
8-7-10

## REVISIONS



## Notes:

1. All Cadweld splices shown to be T-series
2. Place bars C between existing reinforcing.
3. Contractor's option to "cut-off" other bars to facilitate the removing of concrete and for placing of reinforcing however bars must be replaced and connected by Cadweld splices.
4. All concrete to be non-shrinkage with  $f'_c = 4000 \text{ psi}$



DESIGNED

DRAWN

P. Ouellet

REVIEWED

19-A-970.2



PROJECT

THE WORLD TRADE CENTER

TITLE

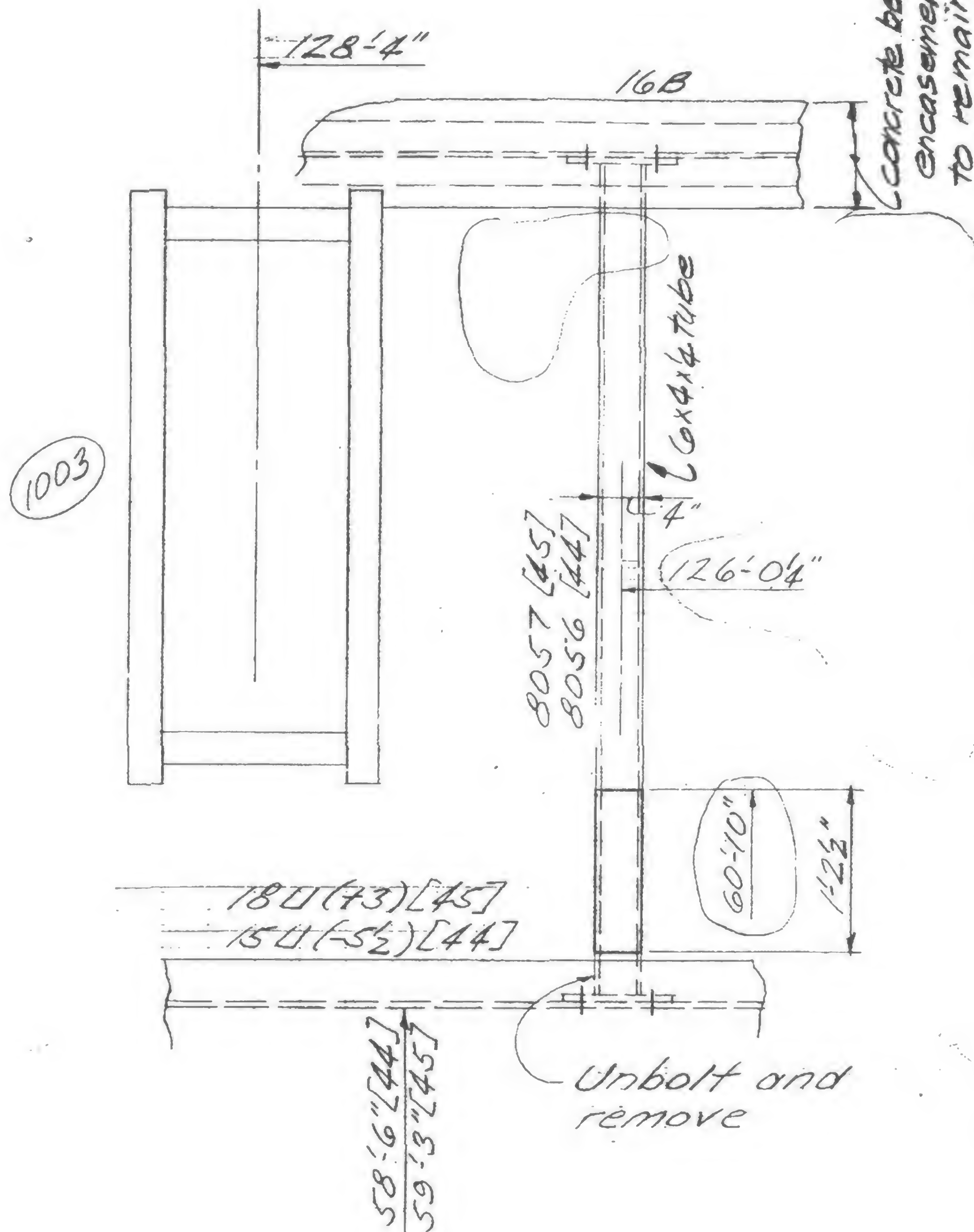
REPAIR TO SEPERATOR BEAM COL 1003-FL 44 &amp; 45

DATE

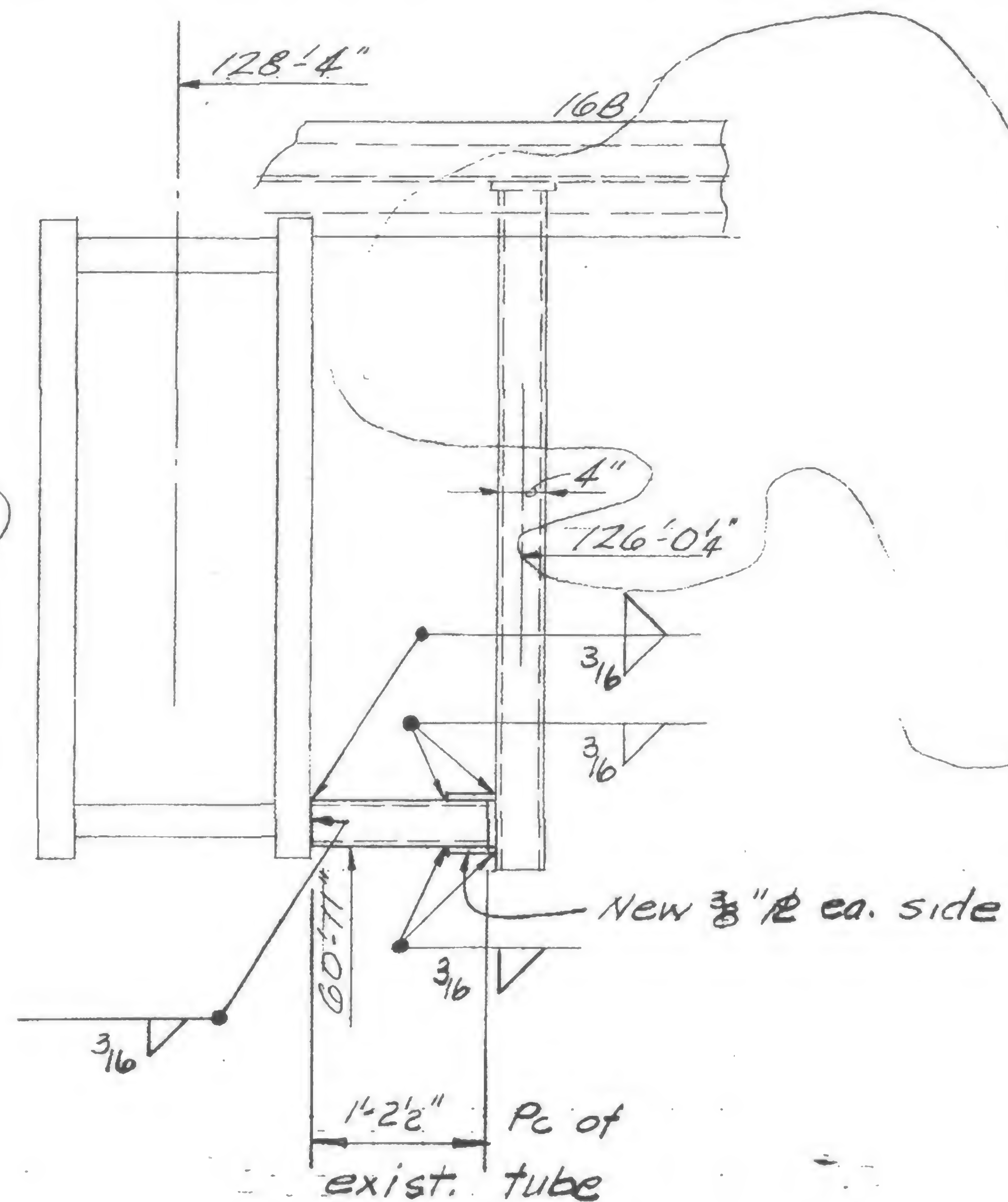
8/26/70

REVISIONS

9/25/70



Existing Part Plan  
Floors 44 & 45



Revised Part Plan

To accomodate Elevator as  
detailed on Otis Elevator Co.  
Dwg. No. 347308-PN dated 6-27-70



DESIGNED

DRAWN

J. H. Adams

REVIEWED

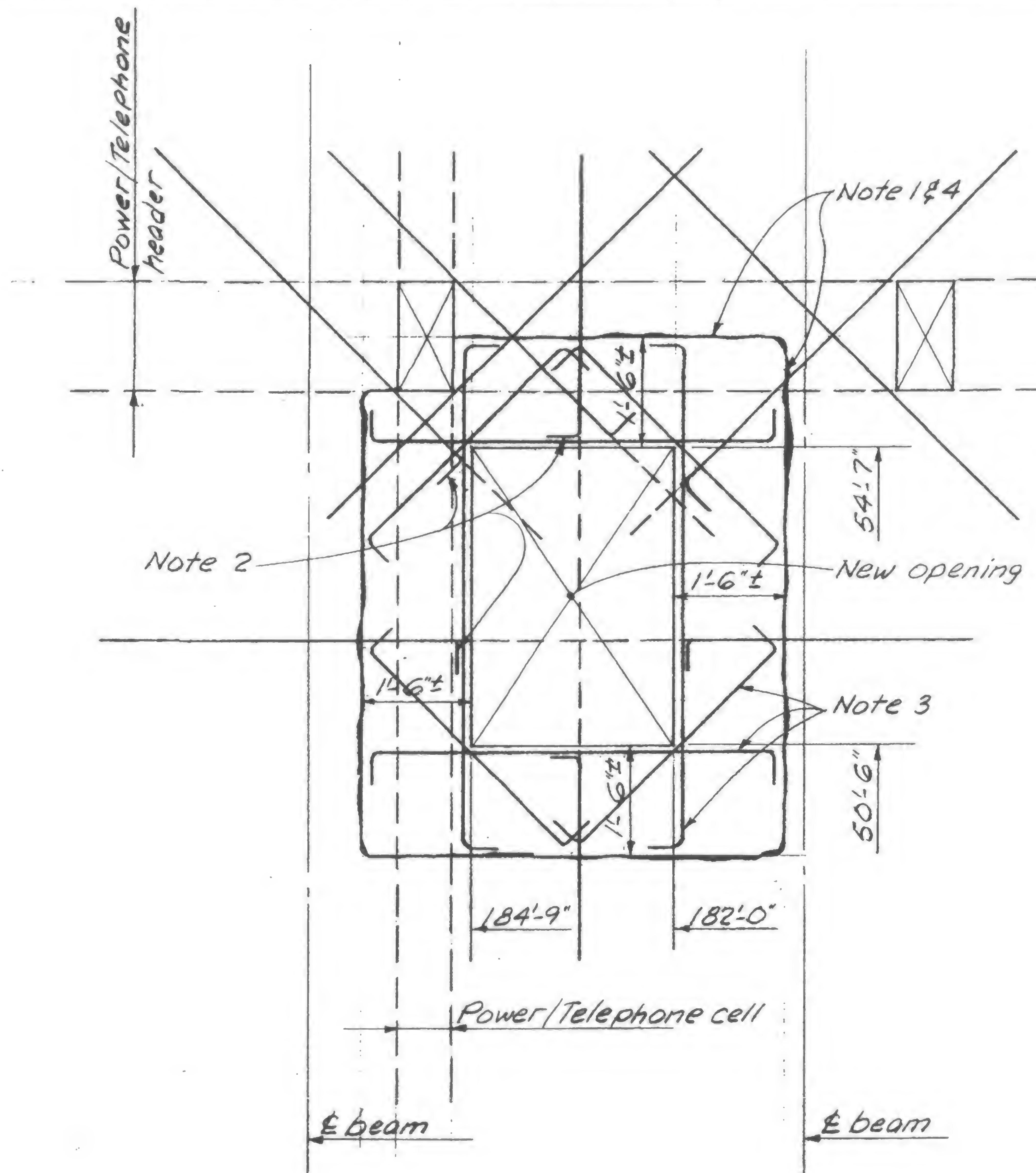
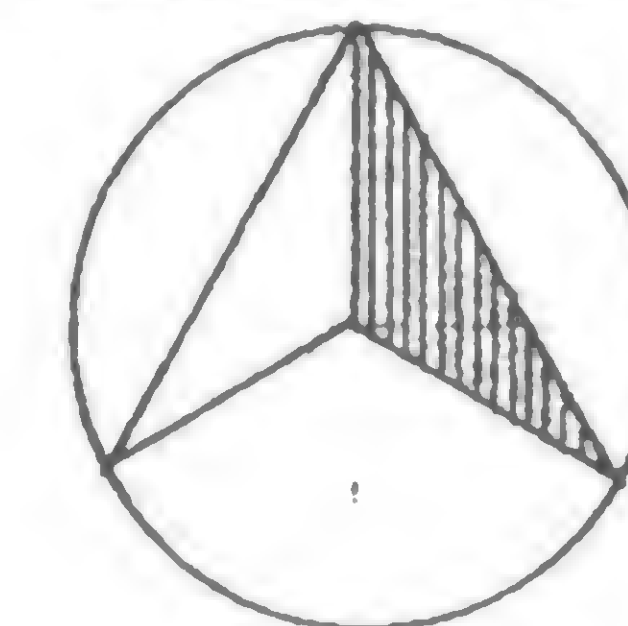
19-A-971





## REVISIONS

NORTH



## Notes

1. Remove concrete to line indicated without damaging existing reinforcing steel or Power/Telephone header or cell.
2. Hook all existing reinforcing steel at new opening.
3. Add 2-#5 each side and each corner, hook each end.
4. Coat face of concrete with approved epoxy bonding compound and cast slab to opening dimensions shown, with non shrink  $f'_c = 3000$  psi stone aggregate concrete.



DESIGNED

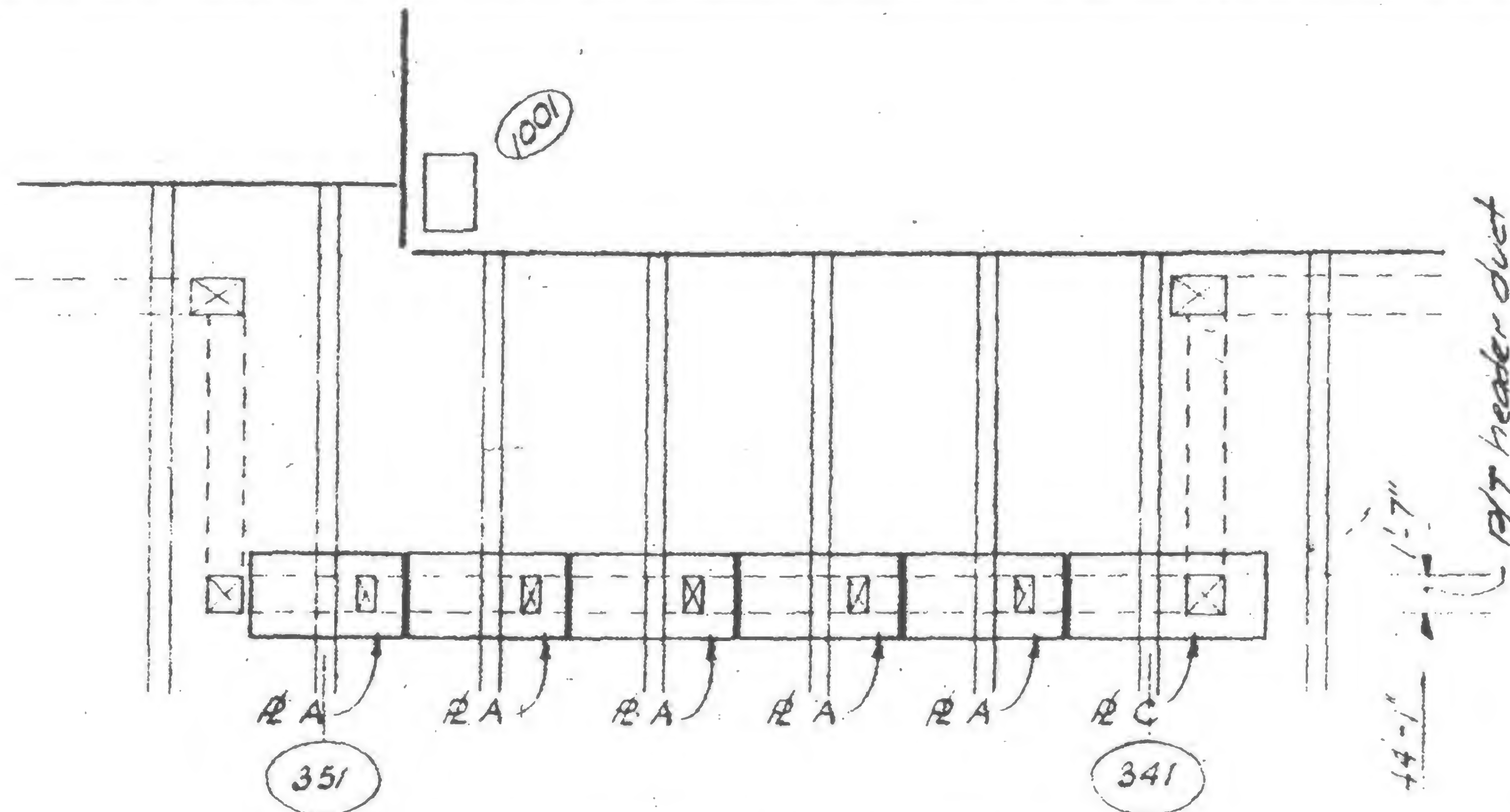
DRAWN  
A. FRANQUI

REVIEWED

19-A-972

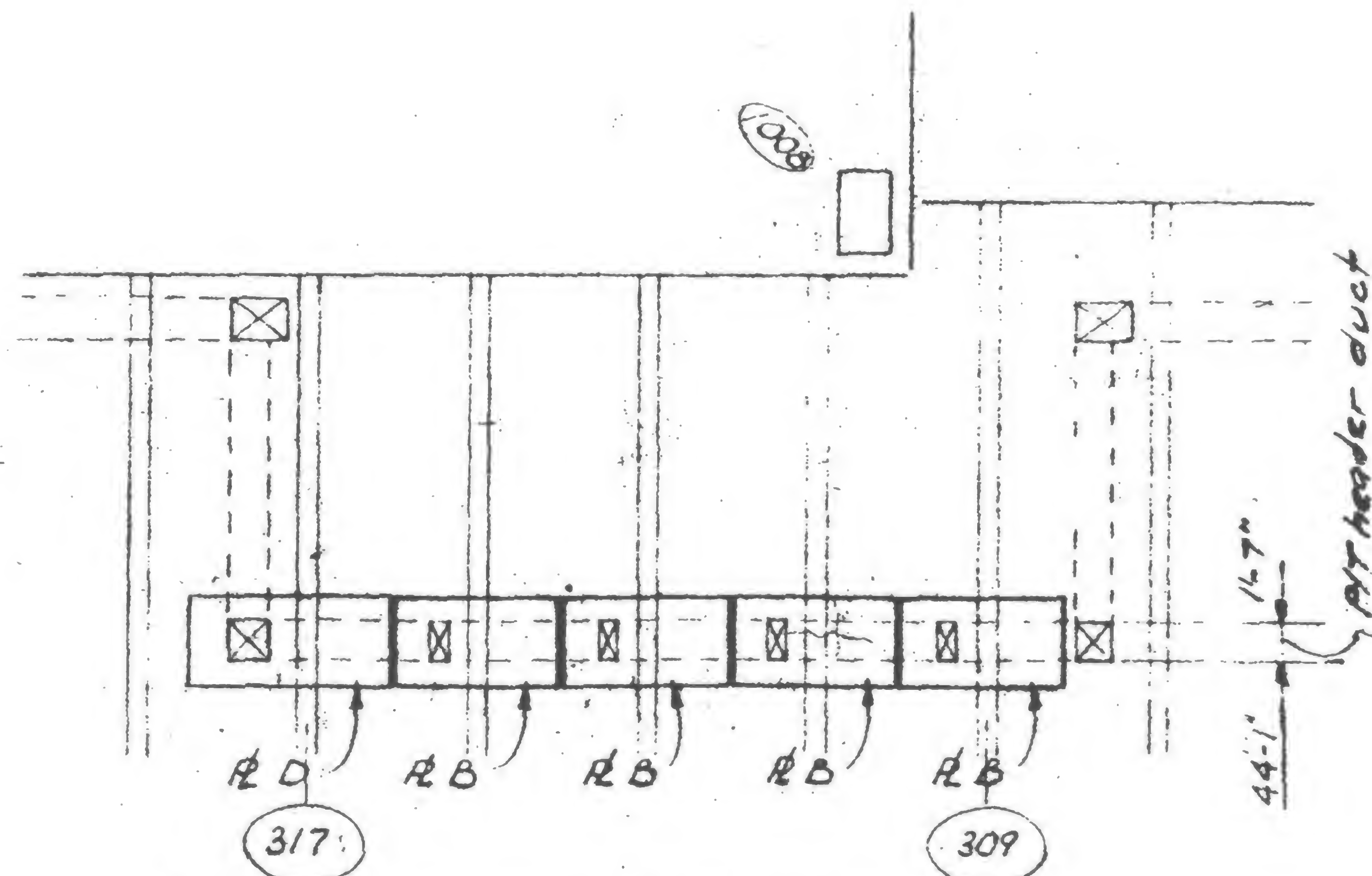


## REVISIONS



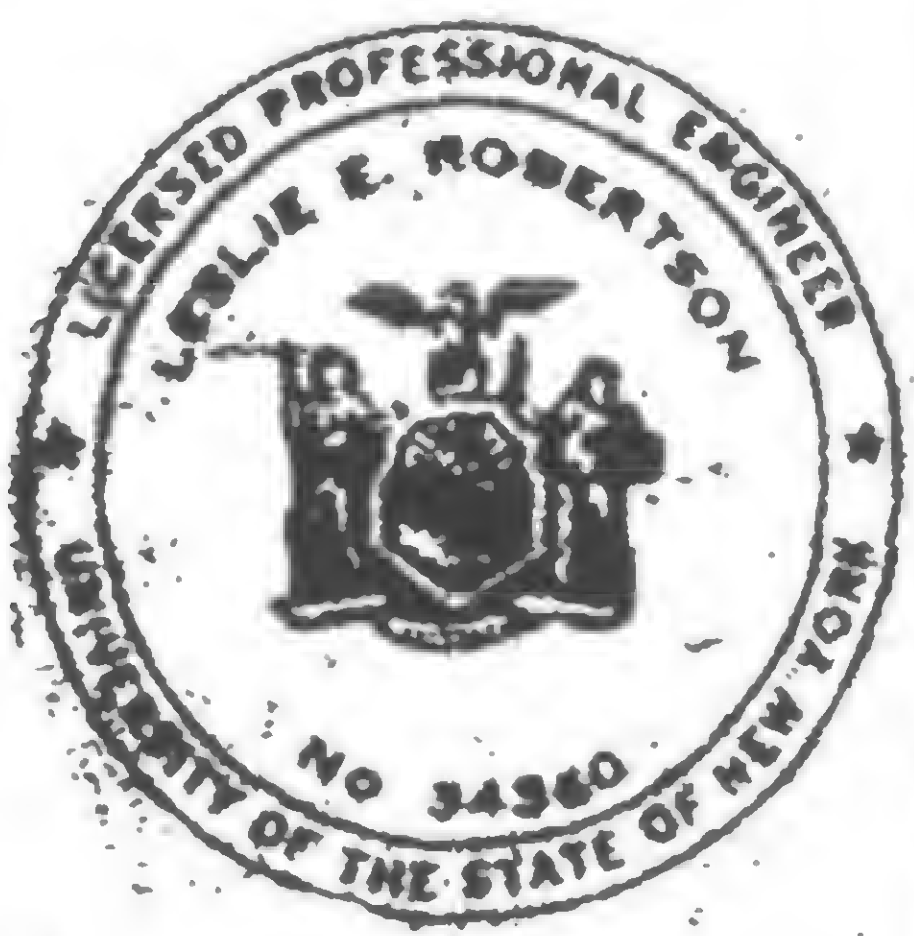
Part Plan SE Fl. 44 Tower B

See 19-B-973.2  
for details of  
R A thru D



Part Plan NE Fl. 44 Tower B

19-B-973.1



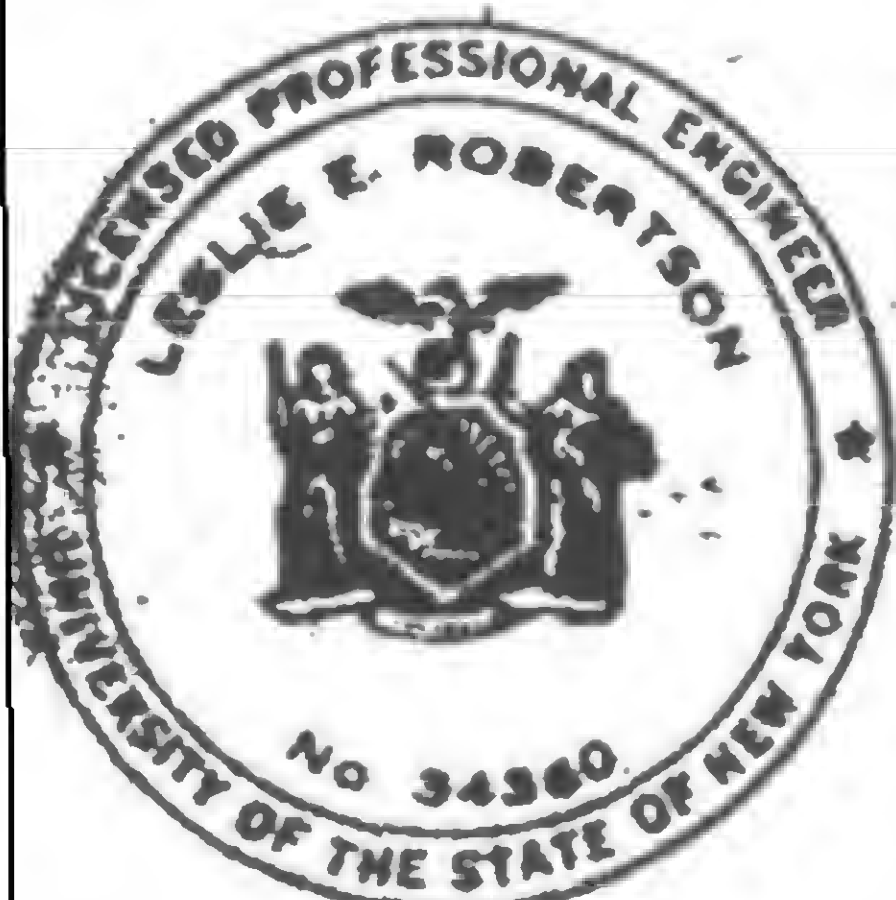
SIGNED

DRAWN  
D. Huggins

REVIEWED



9-B-973.2



**WITNESSED**

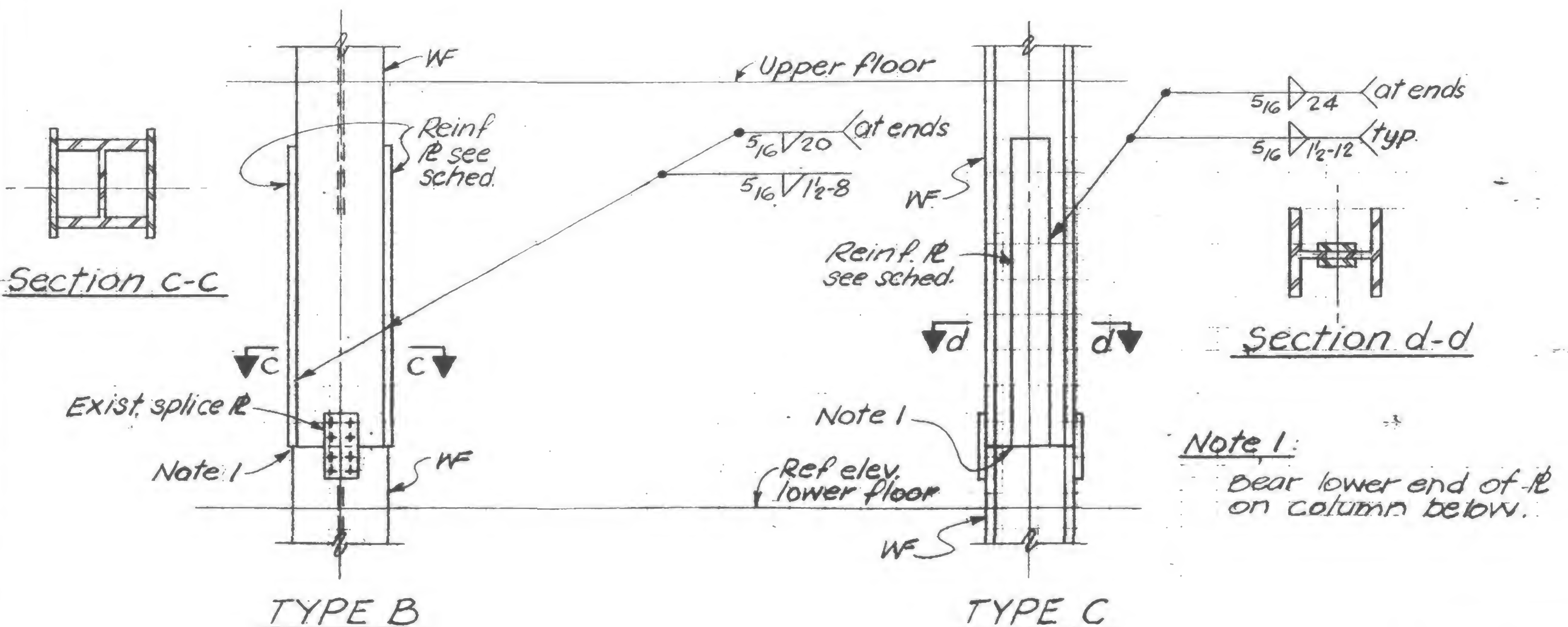
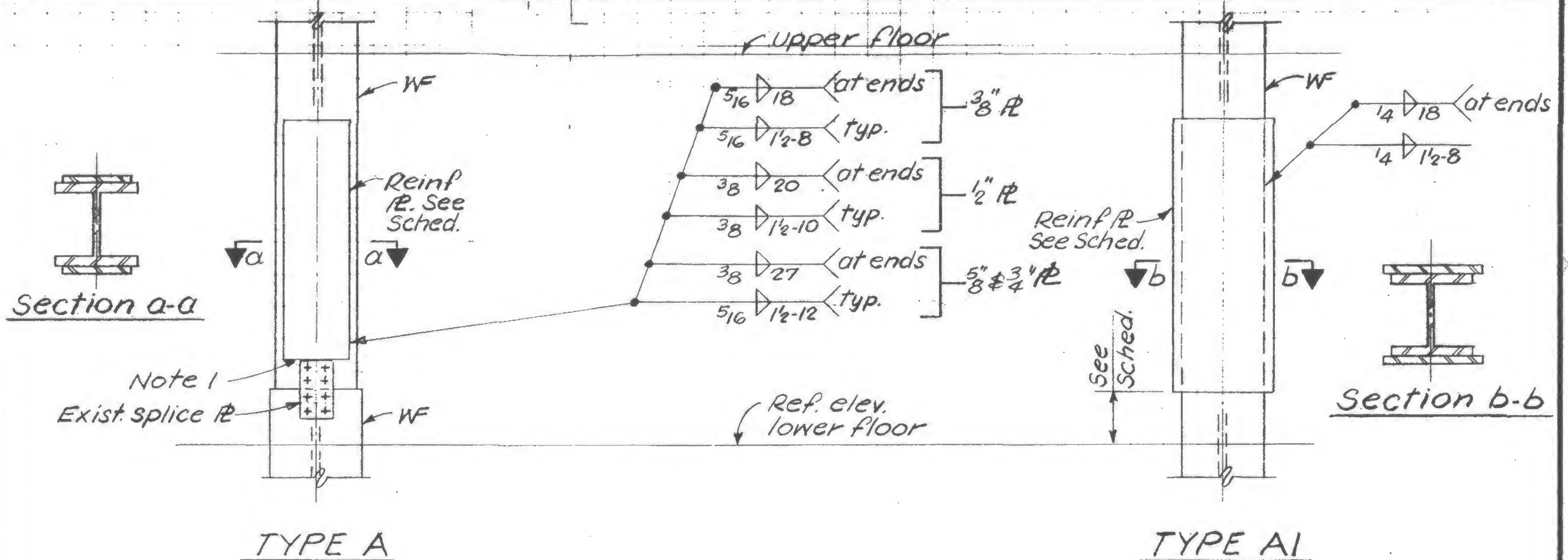
**DRAWN**

*D. Huggins*

REVIEWED



REVISIONS



**Note 1:**  
Bear lower end of R on column below.



DESIGNED

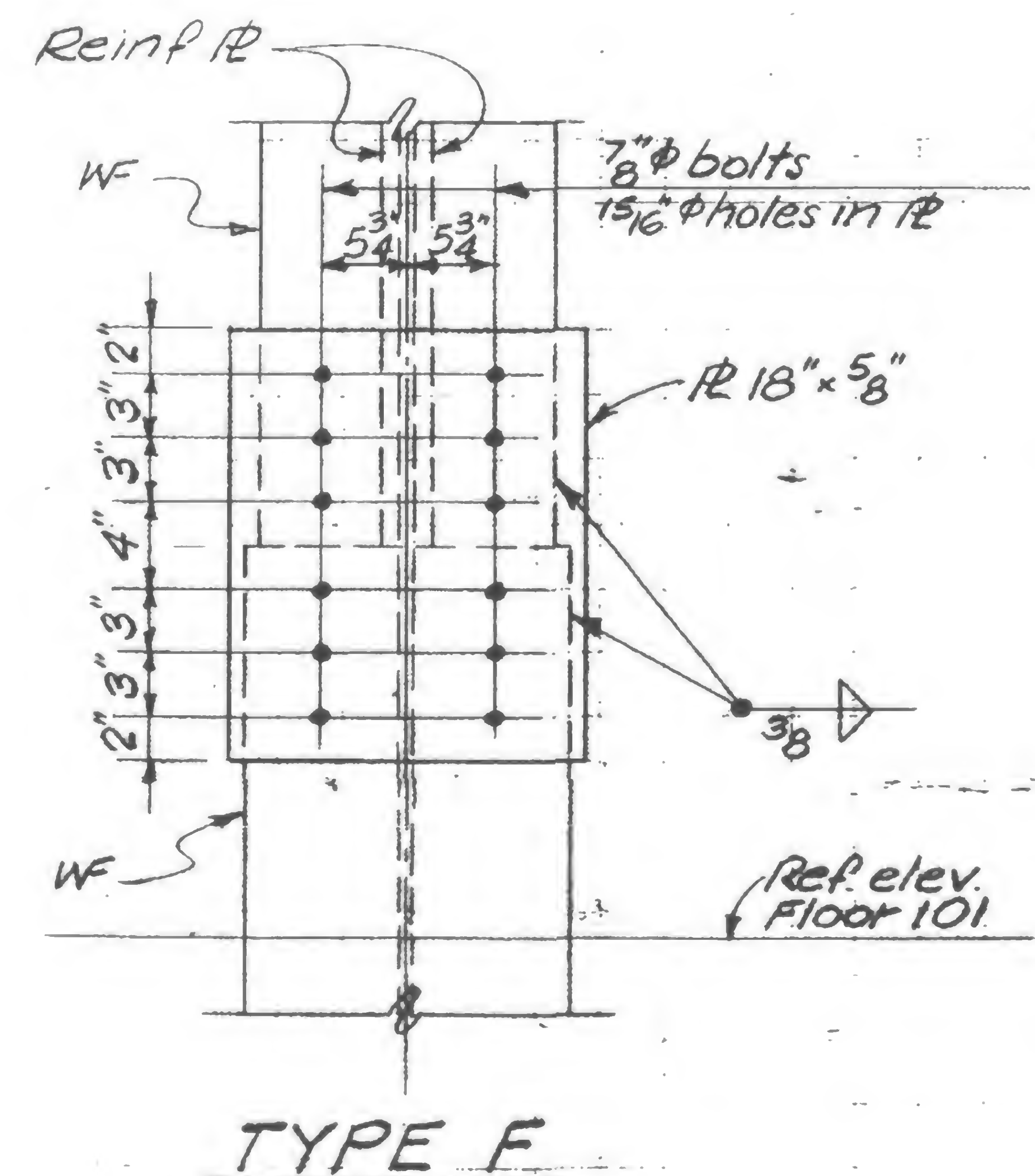
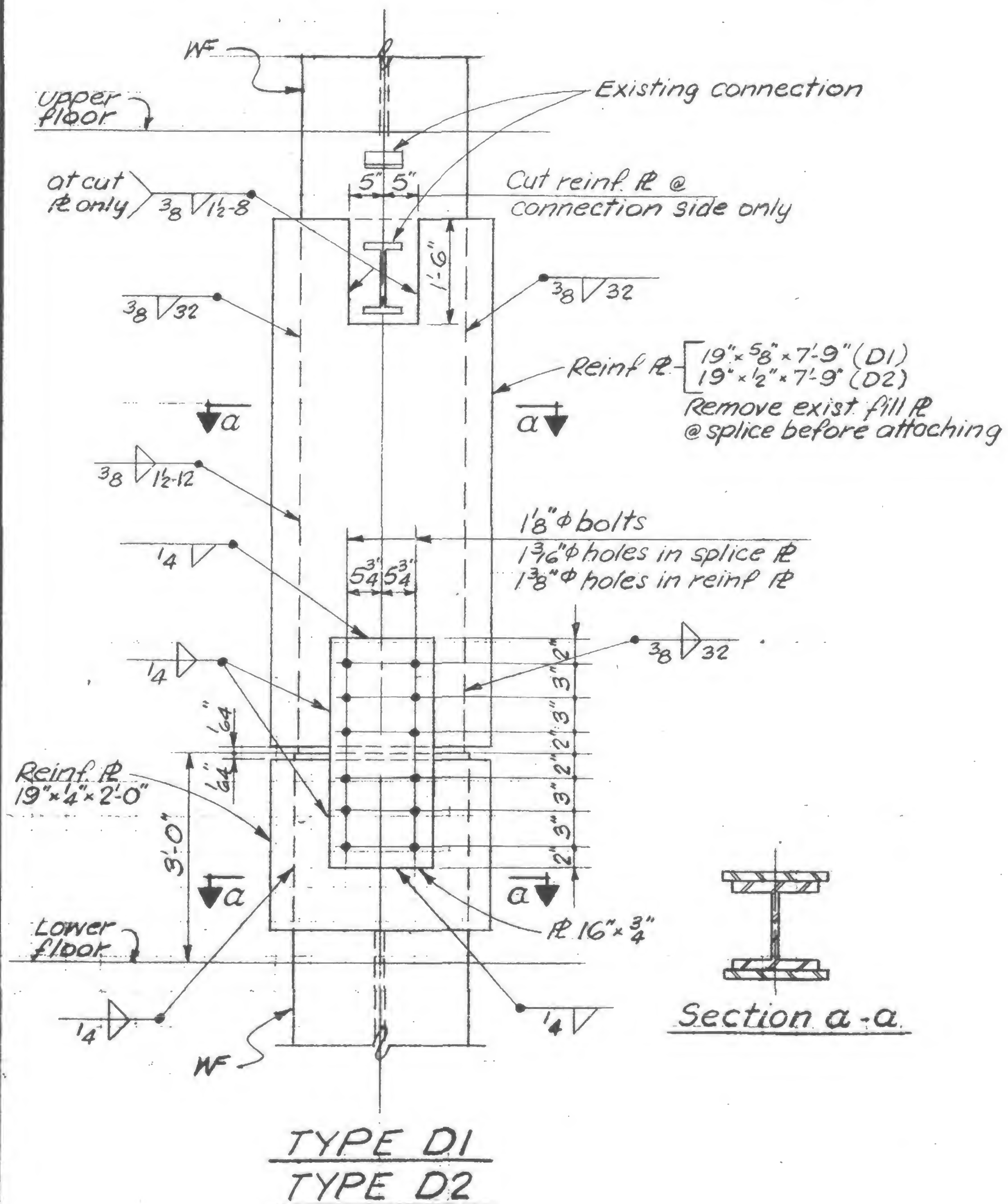
DRAWN  
S.C.

REVIEWED  
H.R.

19-AB-974.2



## REVISIONS



**DESIGNED**

**DRAWN**

S.C.

REVIEWED

H.R.

19-AB-974.3

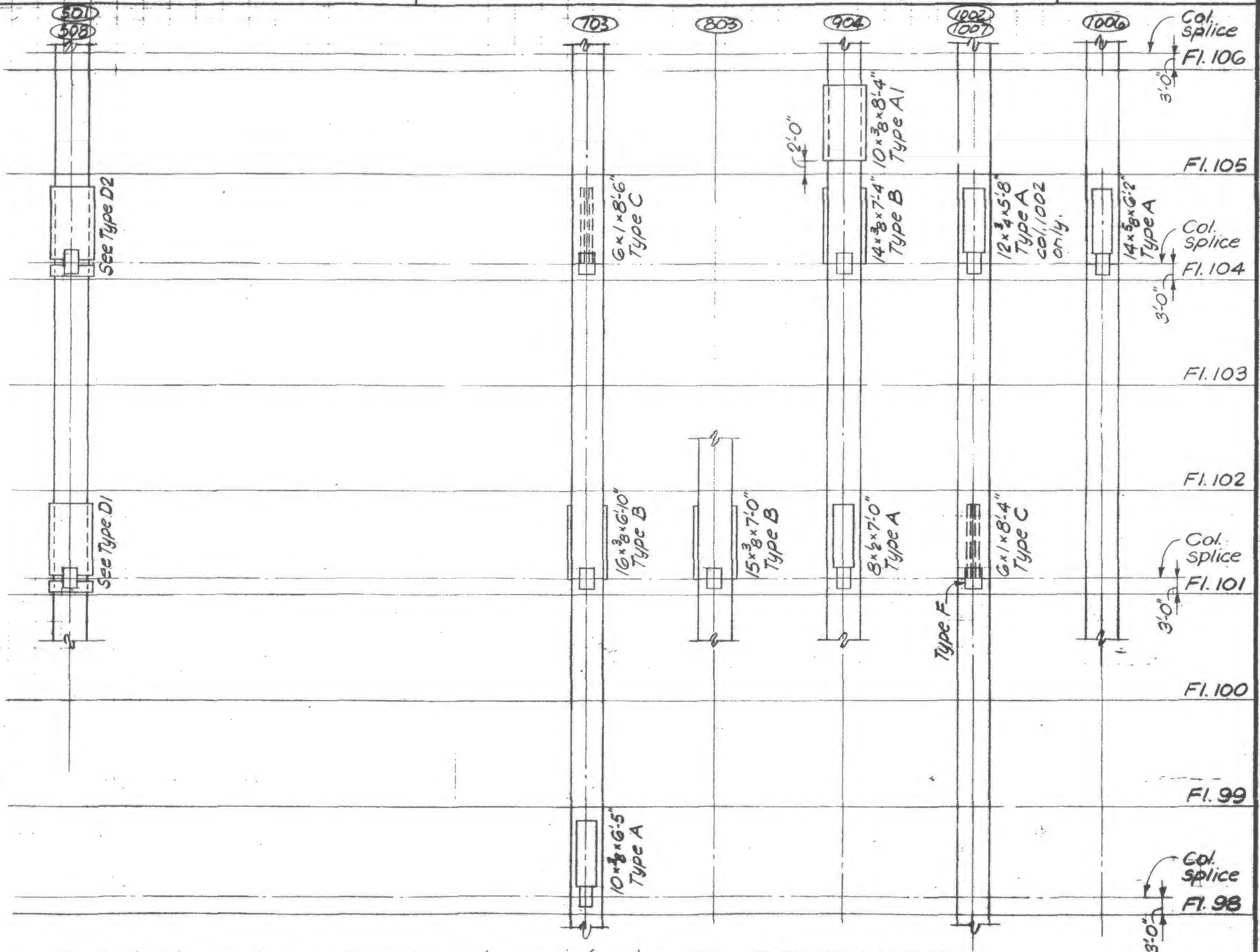


## Structural & Civil Engineers

TITLE CORE COLUMN REINFORCING FL 98-106

DATE 12-1-71

## REVISIONS



The following columns do not require reinforcing: 502, 503, 504, 505, 506, 507, 601, 602, 603, 604, 605, 606, 607, 608, 701, 702, 704, 705, 706, 707, 708, 801, 802, 804, 805, 806, 807, 901, 902, 903, 905, 906, 907, 908, 1001, 1003, 1004, 1005, 1008.

19-AB-974.1



DESIGNED

DRAWN  
S.C.

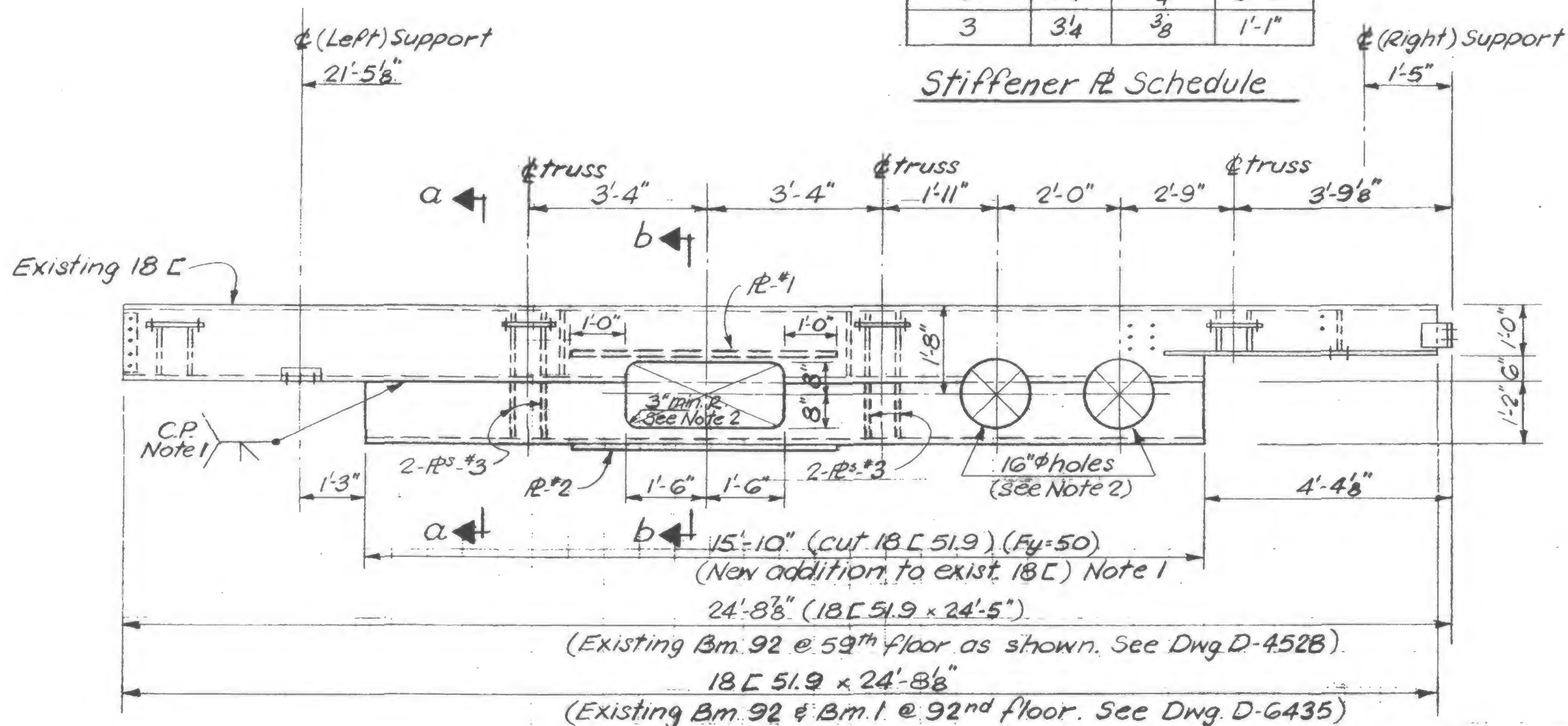
REVIEWED  
H.R.



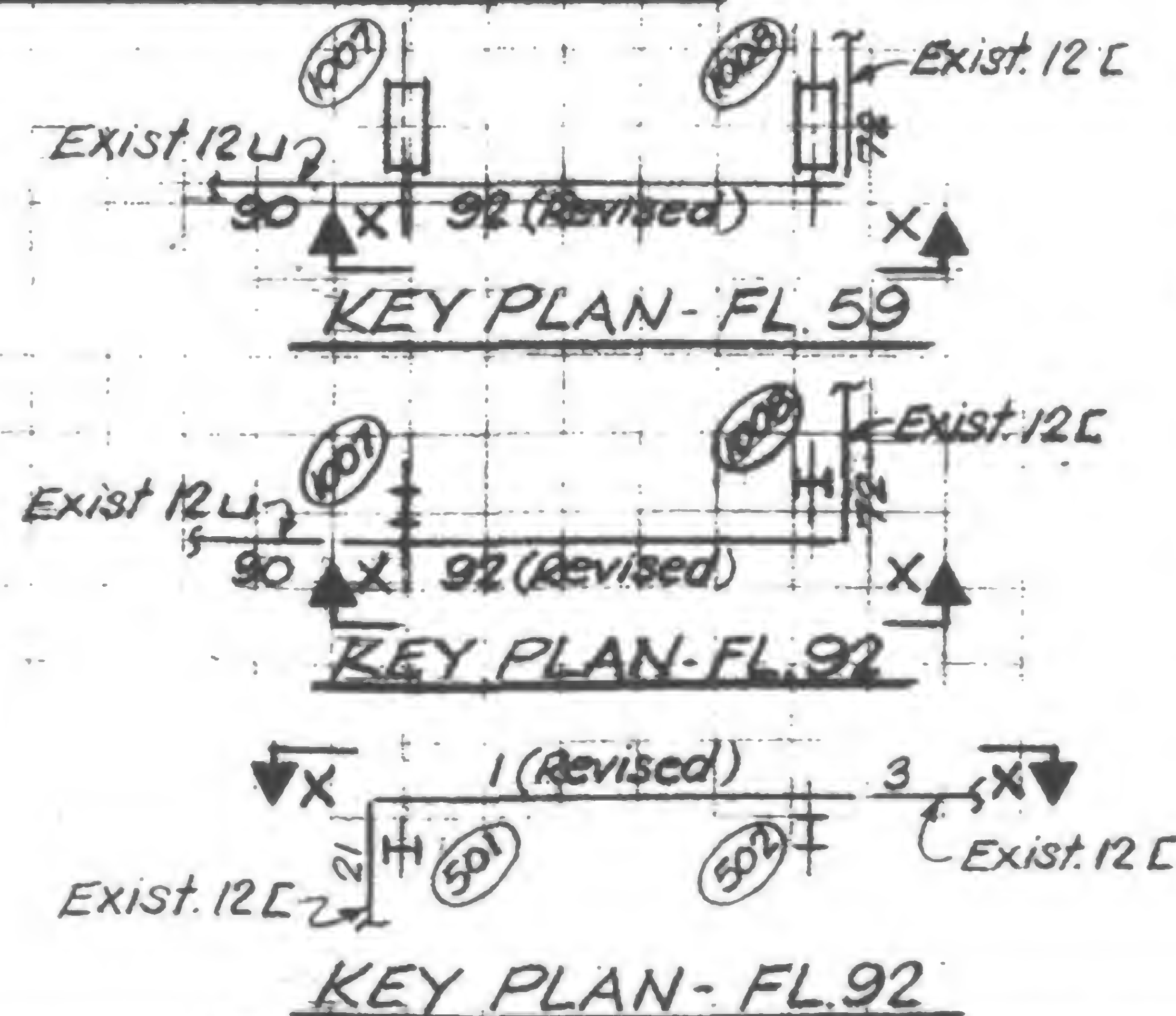
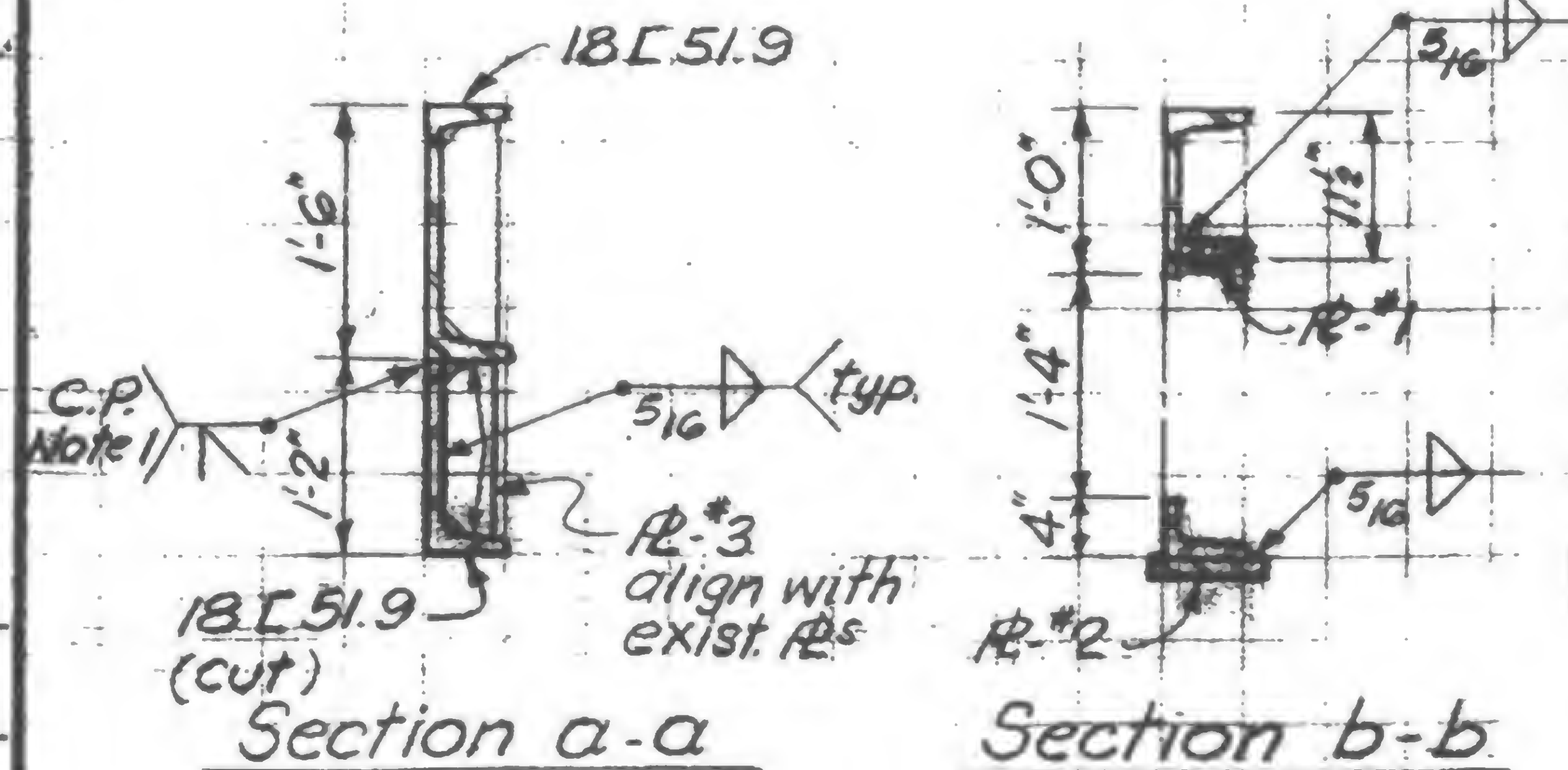
## REVISIONS

R NUMBER	R SIZE		
	Width	Thickness	Length
1	4 1/4	5/8	5'-0"
2	5 1/4	3/4	5'-0"
3	3 1/4	3/8	1'-1"

Stiffener R Schedule

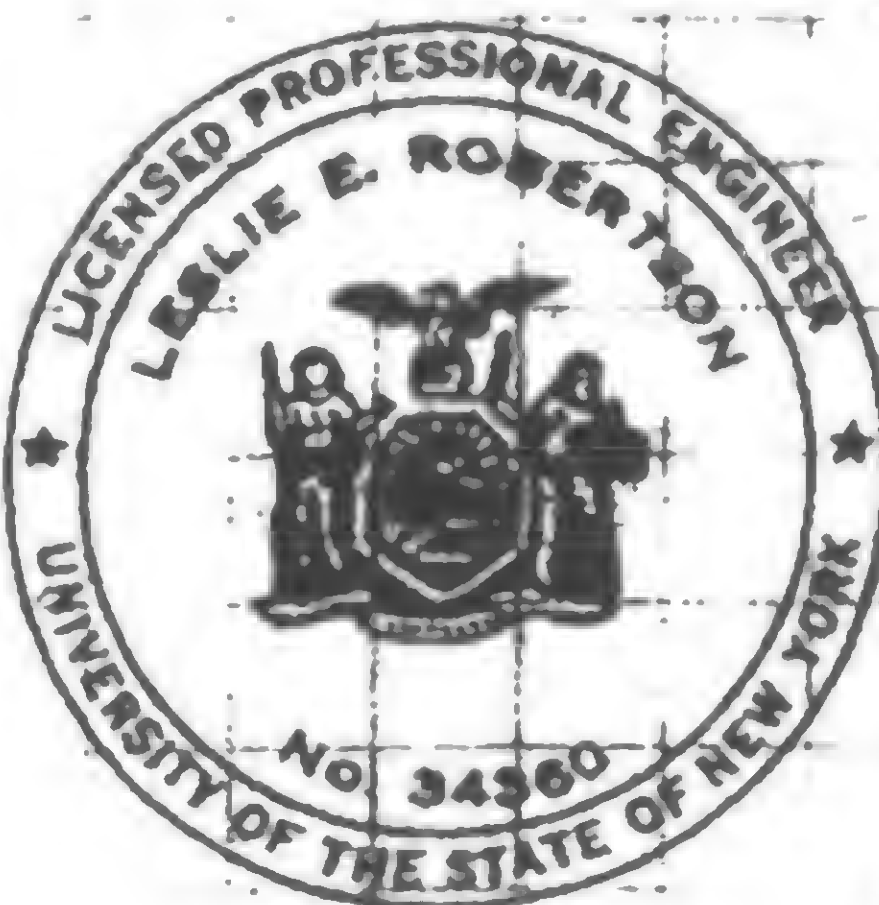


ELEVATION X-X



## Notes:

- Channel assembly to be welded before openings are cut in web.
- Cut new holes with smooth notch-free cut surface (ASA 250)



DESIGNED

DRAWN  
S.C.

REVIEWED

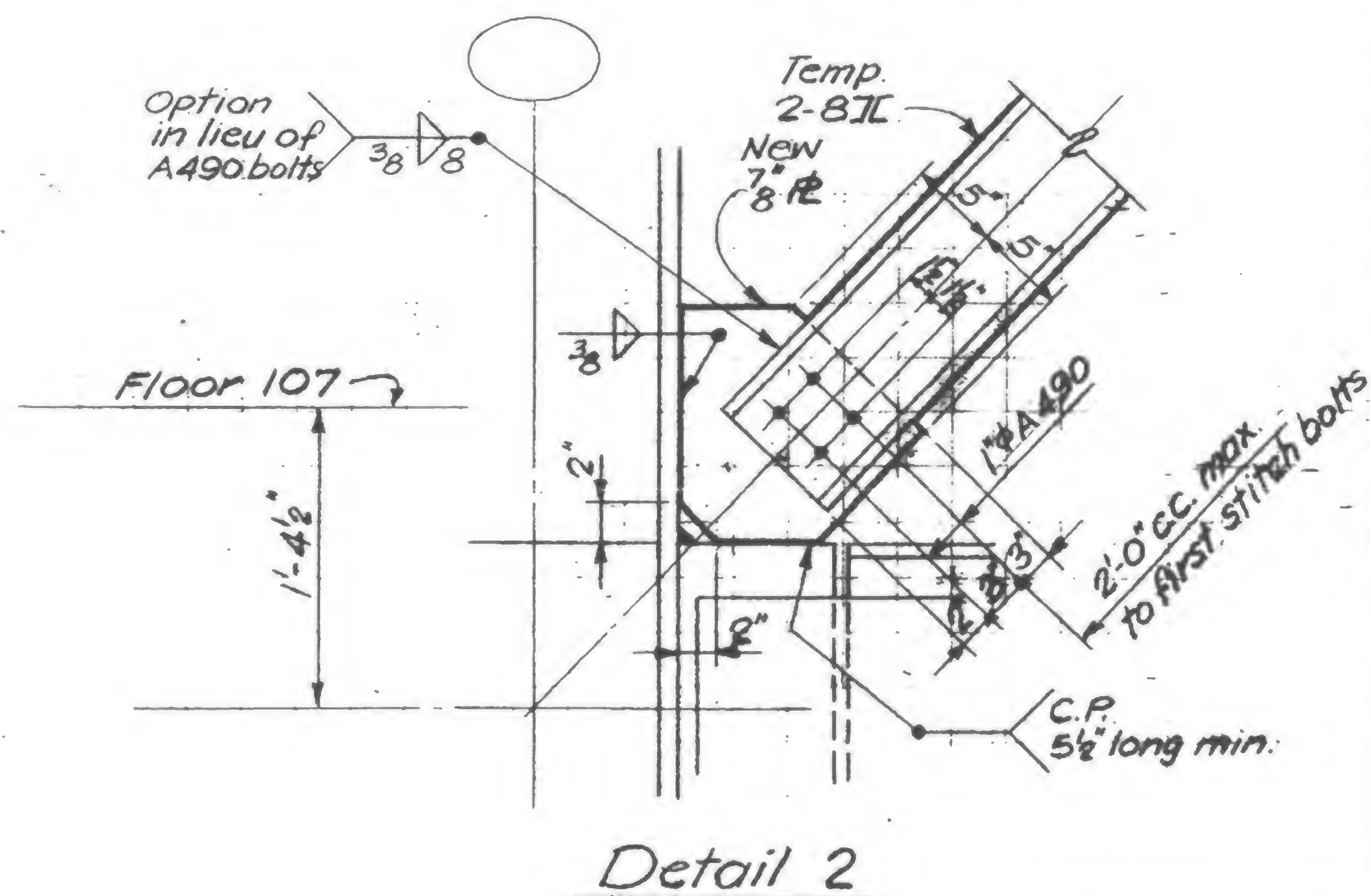
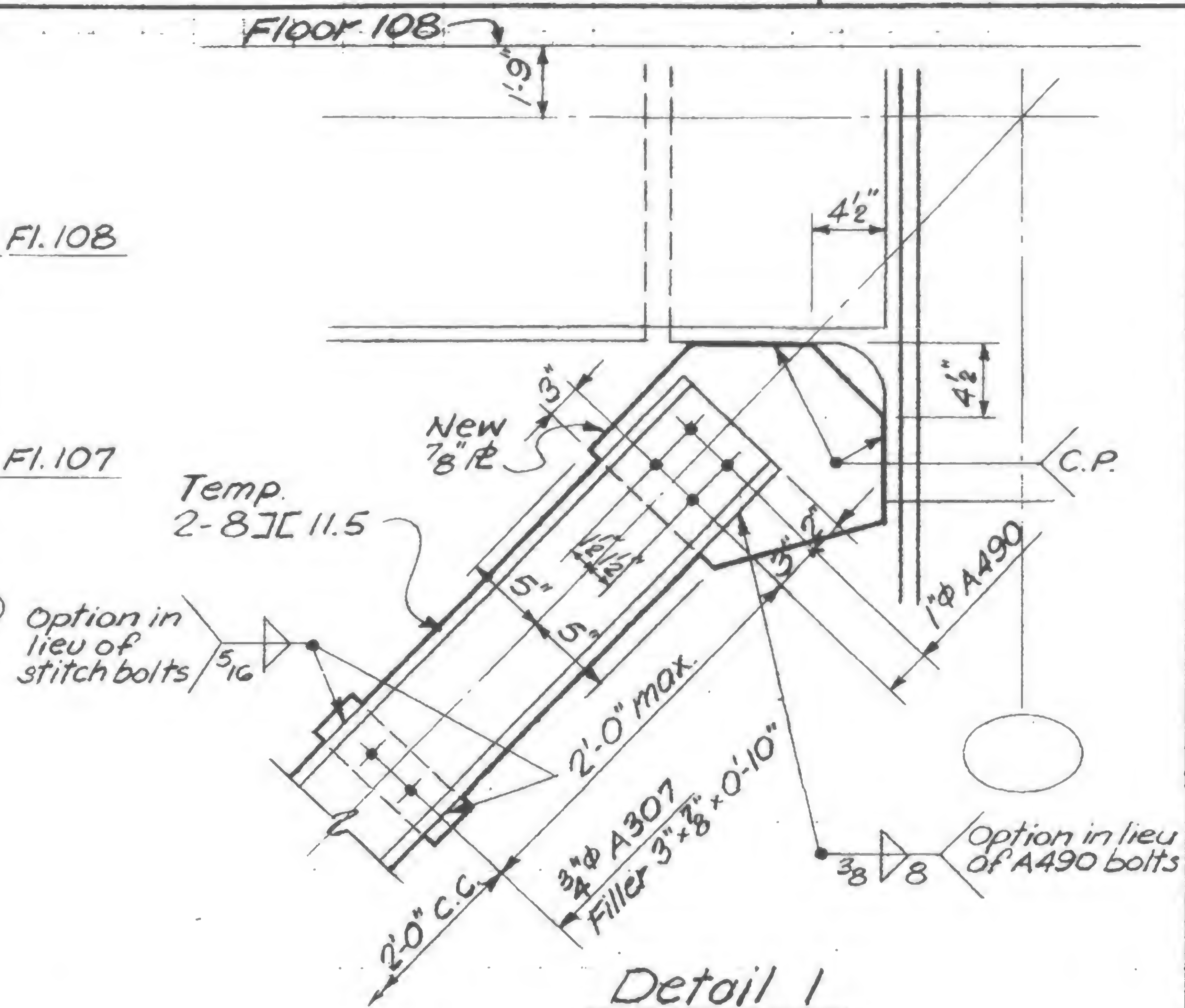
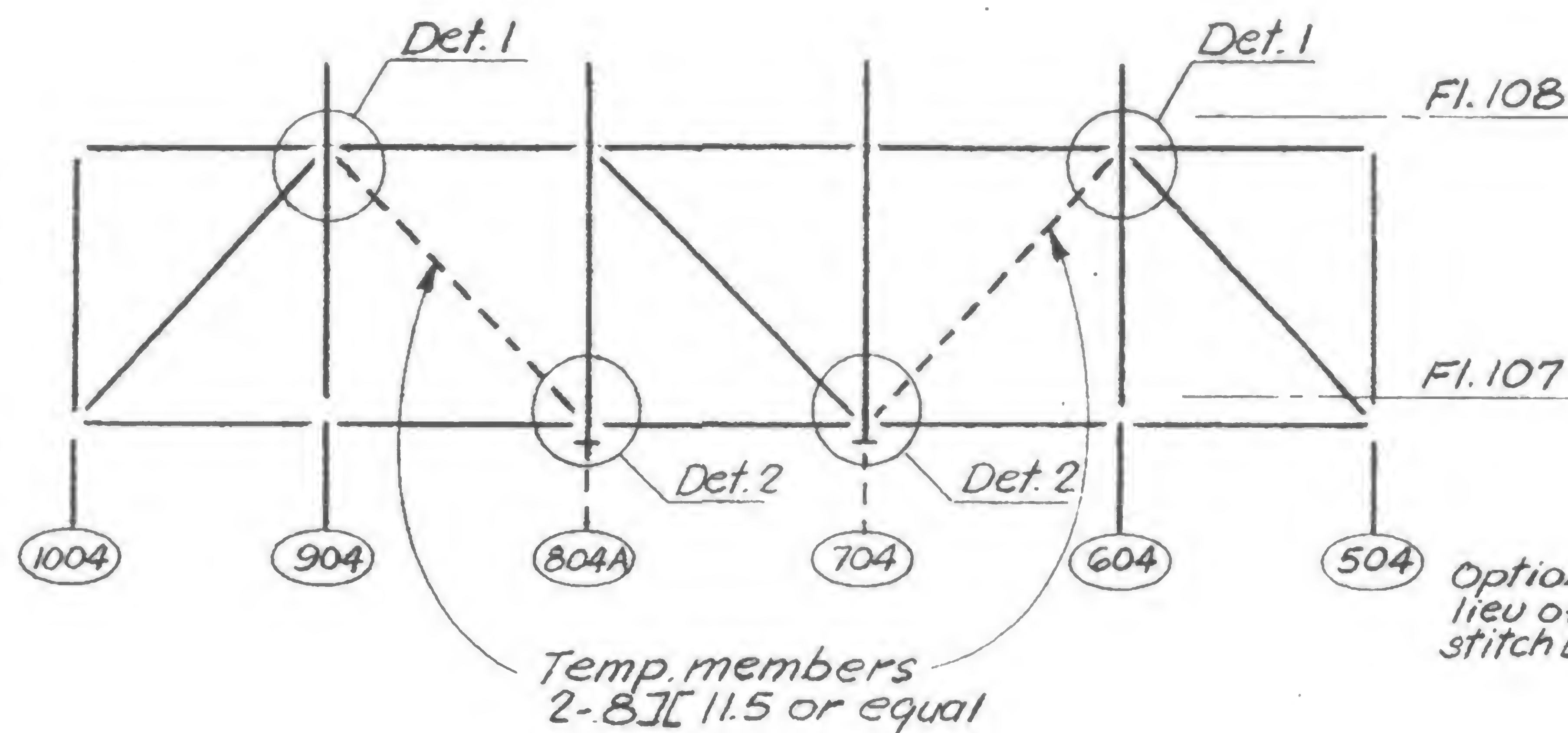


SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT **THE WORLD TRADE CENTER**TITLE **TEMPORARY TRUSS FL. 107-108 TOWER A**DATE **1-7-71**

REVISIONS



19-A-980



DESIGNED

DRAWN

S.C.

REVIEWED



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

WTC 444.00

PROJECT THE WORLD TRADE CENTER

TITLE INDEX - FLOOR 106 REINF. FOR RESTAURANT

DATE 10-18-79

REVISIONS

Drawing Number

Status \*

Latest Date or  
Latest Rev. Date

Drawing Number

Status \*

Latest Date or  
Latest Rev. Date

5-9-79 R

11-30-79 A

19-A-981.0

INDEX

11-30-79

19-A-981.X

GENERAL NOTES

10-15-79

19-A-982.3

SD

10-15-79

19-A-983.1

SD

5-9-79

19-A-983.1A

NRR

19-A-983.1B

NRR

19-A-983.1C

SD

19-A-983.1D

SD

19-A-983.2

SD

19-A-983.2A

SD

19-A-983.3

SD

19-A-983.3A

SD

19-A-983.4

SD

19-A-983.4A

SD

19-A-983.5

SD

19-A-983.6

SD

19-A-983.7

SD

19-A-983.8

SD

19-A-983.9

SD

19-A-983.10

SD

19-A-983.11

SD

19-A-983.12

SD

19-A-984.1

SD

19-A-984.2

SD

19-A-984.3

SD

19-A-984.4

NRR

19-A-984.5

SD

19-A-984.6

NRR

19-A-984.7

SD

19-A-984.8

SD

5-9-79

11-30-79

19-A-985.1

SD

19-A-985.2

SD

19-A-985.3

SD

19-A-985.4

SD

19-A-985.5

SD

19-A-985.6

SD

19-A-985.7

SD

19-A-985.8

SD

19-A-985.9

SD

19-A-985.10

SD

19-A-986.

NRR

19-A-987.1

SD

19-A-987.2

SD

19-A-987.3

NRR

19-A-987.4

SD

19-A-987.5

SD

19-A-987.6

SD

19-A-988.1

SD

19-A-988.2

SD

19-A-988.3

SD

19-A-989.1

SD

19-A-989.2

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19-A-989.3

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19-A-989.4

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19-A-990.1

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19-A-990.3

SD

SA-114

SD

11-30-79

SCA-108

SD

10-5-79

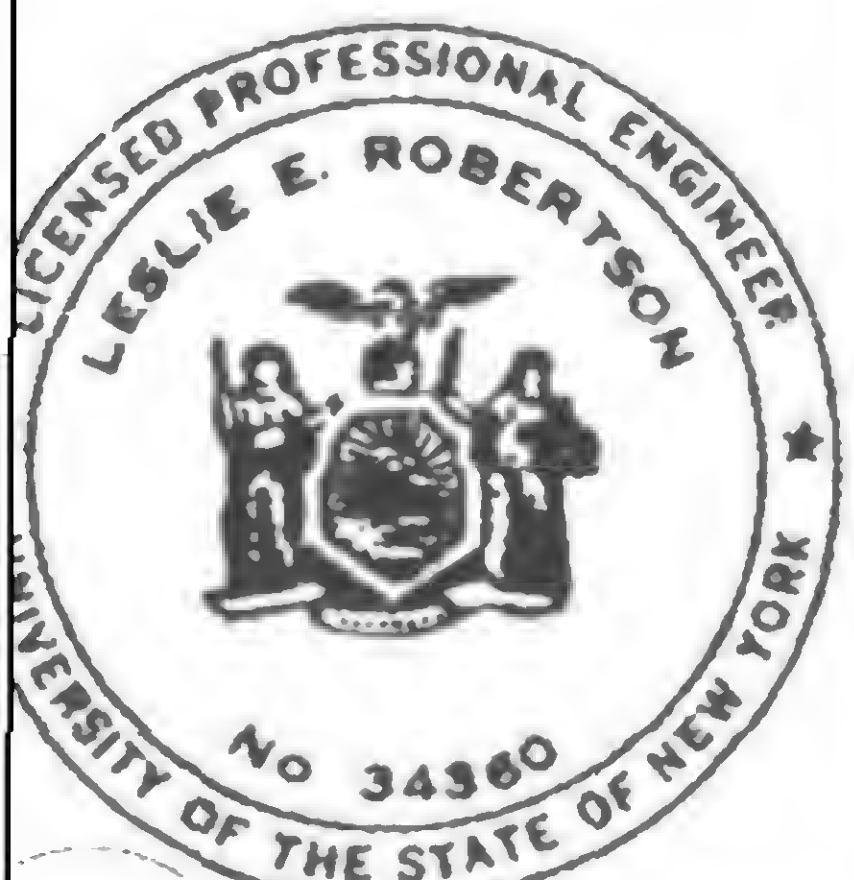
SCA-133

SD

10-5-79

\* SD = see drawing ; NRR = No reinforcing required or no new reinforcing required  
 Note: Details indicate thus 988A are to be performed under this contract WTC 444.00. Details indicated otherwise have been previously installed or are not required.

19-A-981.0


 DRAWN  
 PHD  
 REVIEWED  
 WAB



PROJECT THE WORLD TRADE CENTER

TITLE GENERAL NOTES - FLOOR 106

DATE 5-9-79

## REVISIONS

Per ed 10/5/79

10/15/79

## Codes

1. Building Code for the City of New York.
2. AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings.
3. Structural Welding Code AWS D1.1-Rev. 2-77.
4. ACI 318-77 "American Concrete Institute Standard Building Code Requirements for Reinforced Concrete".

## Site

1. Dimensions shown in the Drawings are correct to the best of the knowledge of the Engineer. However, the Contractor shall verify all dimensions by field measurements prior to installing any material. For material fabricated to fit within restricted dimensions, field dimensions shall be verified prior to fabrication and shall be shown in the shop detail drawings. Shop drawings shall be submitted for approval to the PANYNJ.
2. The length of new members which can be delivered to their various locations is generally limited to 15 feet. The Contractor shall familiarize himself with the site and, where field splicing of members is required, they shall be shown in the shop detail drawings.

## Structural Steel

1. All steel shall be ASTM A36 or another weldable steel included in paragraph 1.4.1.1 of AISC Specifications.
2. All bolted connections shall be made with A325-F bolts.
3. Flags are used to convey end reactions and/or details.

26 indicates a connection detail meeting AISC requirements for 26 kips.

985A indicates a detail is shown in page 19-A-985. When reactions are indicated, the connection is to be provided as above.

4. Electrodes, flux and shielding gas shall conform to AWS A5.1-69, AWS A5.17-69 or AWS A5.20-69 as applicable and shall provide physical properties after welding equivalent to or better than E7018 low hydrogen electrodes. Drying or redrying of low hydrogen electrodes shall be performed at a temperature between 700 and 800 degrees Fahrenheit for not less than one hour.
5. If parts to be joined with fillet welds cannot be brought into direct contact, the fillet weld shall be increased in size above that indicated in the drawing. The increase in size shall be equal to or greater than the gap.
6. Remove spray fireproofing as required. Spray fireproof all added steel and replace spray fireproofing on existing steel.

## Reinforced Concrete

## 1. Concrete

- A. Concrete shall be  $f'_c = 4,000$  psi made with normal weight aggregate.
- B. Concrete which is to be adjacent to existing concrete shall have mixes designed and proportioned to produce minimum practicable shrinkage.
- C. Where concrete is to be cast against existing concrete, the existing concrete shall be cleaned and completely coated with an approved epoxy bonding agent prior to casting new concrete.

## 2. Reinforcing Steel

- A. All reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60 unless otherwise noted in the Drawings.
- B. Detailing of all reinforcing steel shall conform to "ACI Manual of Standard Practice for Detailing Reinforced Concrete Structures -- (ACI 315-74)".

DESIGNED

DRAWN

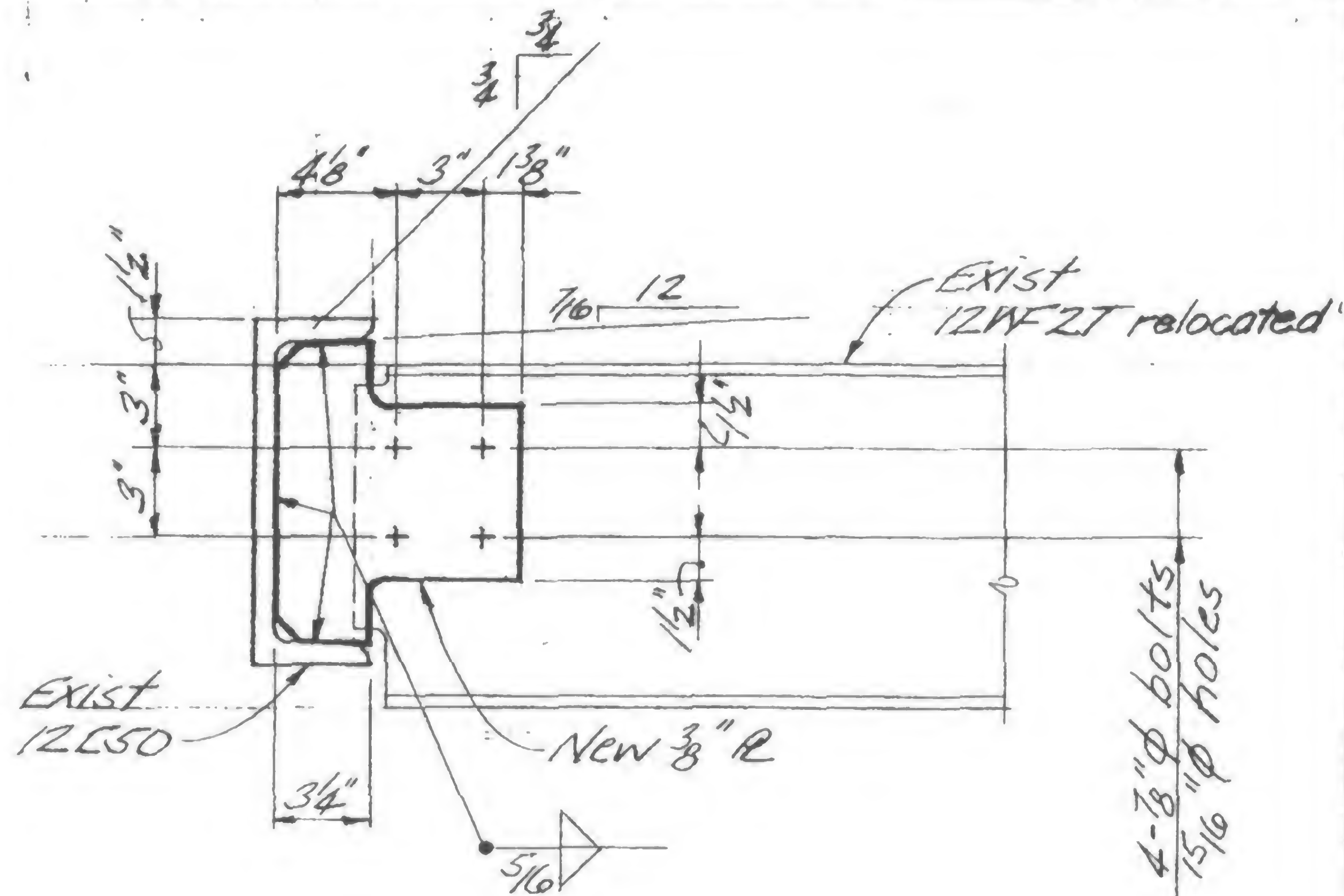
REVIEWED

W. R. R. R.

19-A-981-X

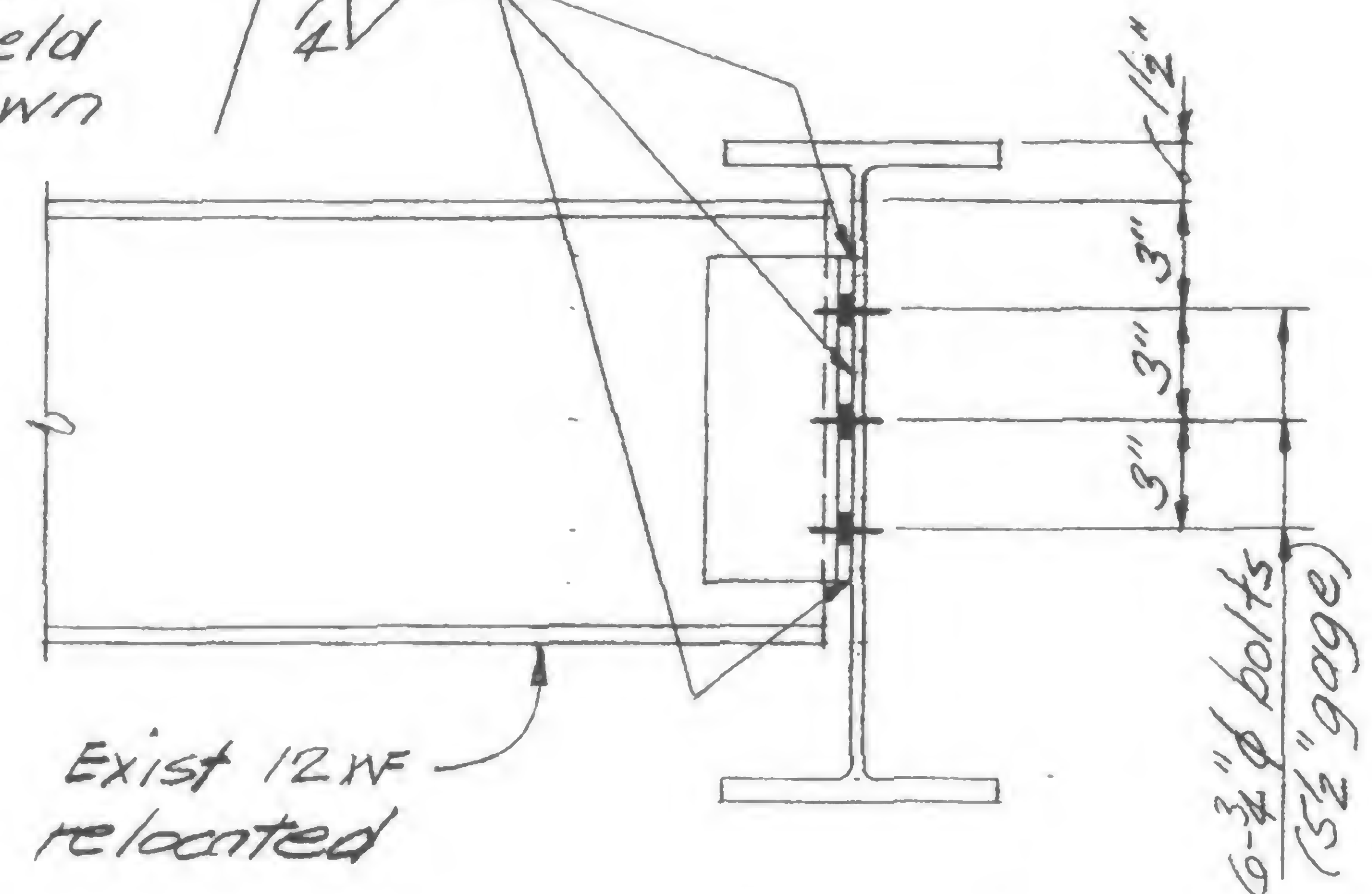


## REVISIONS

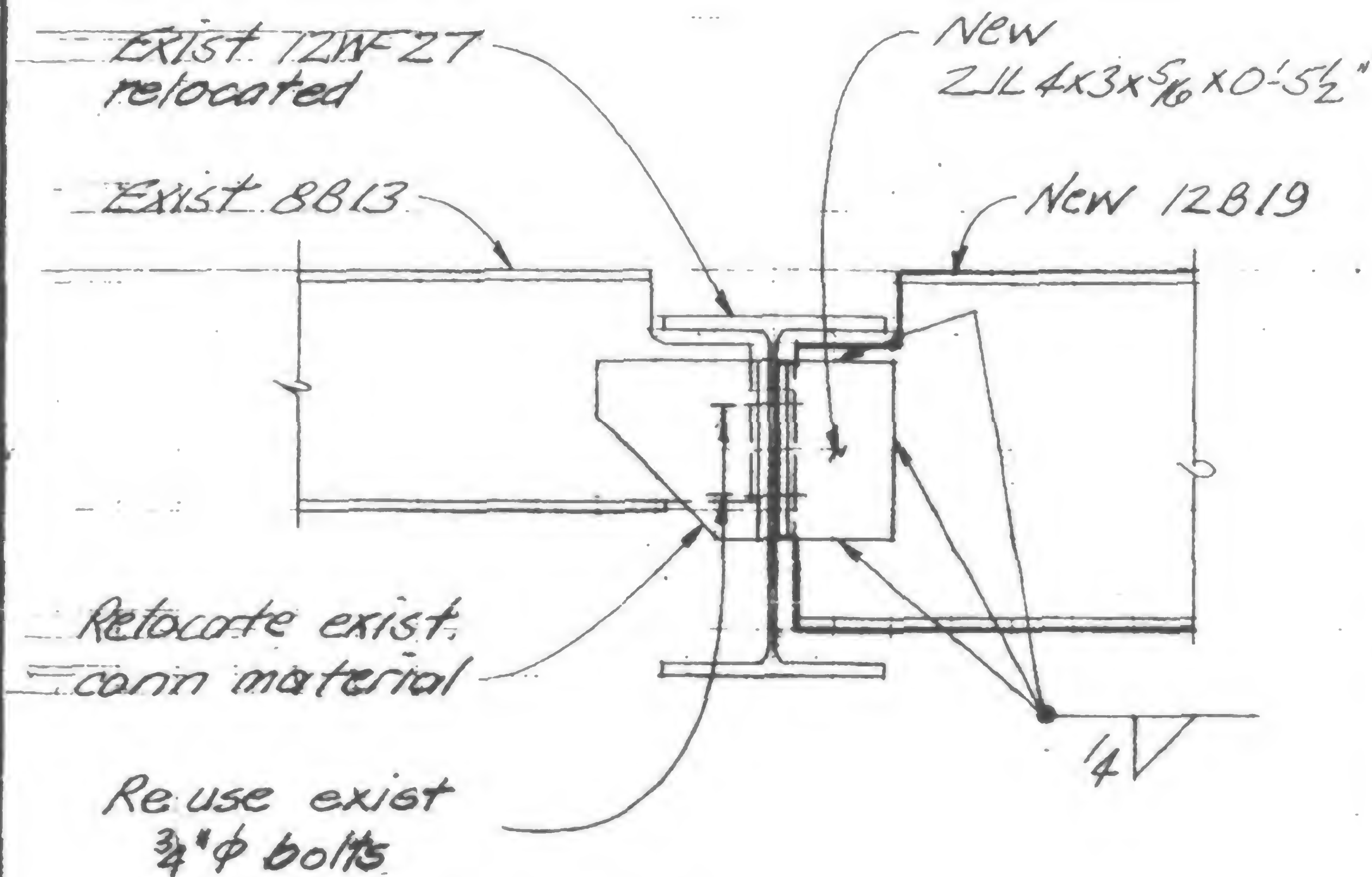


Detail 106A

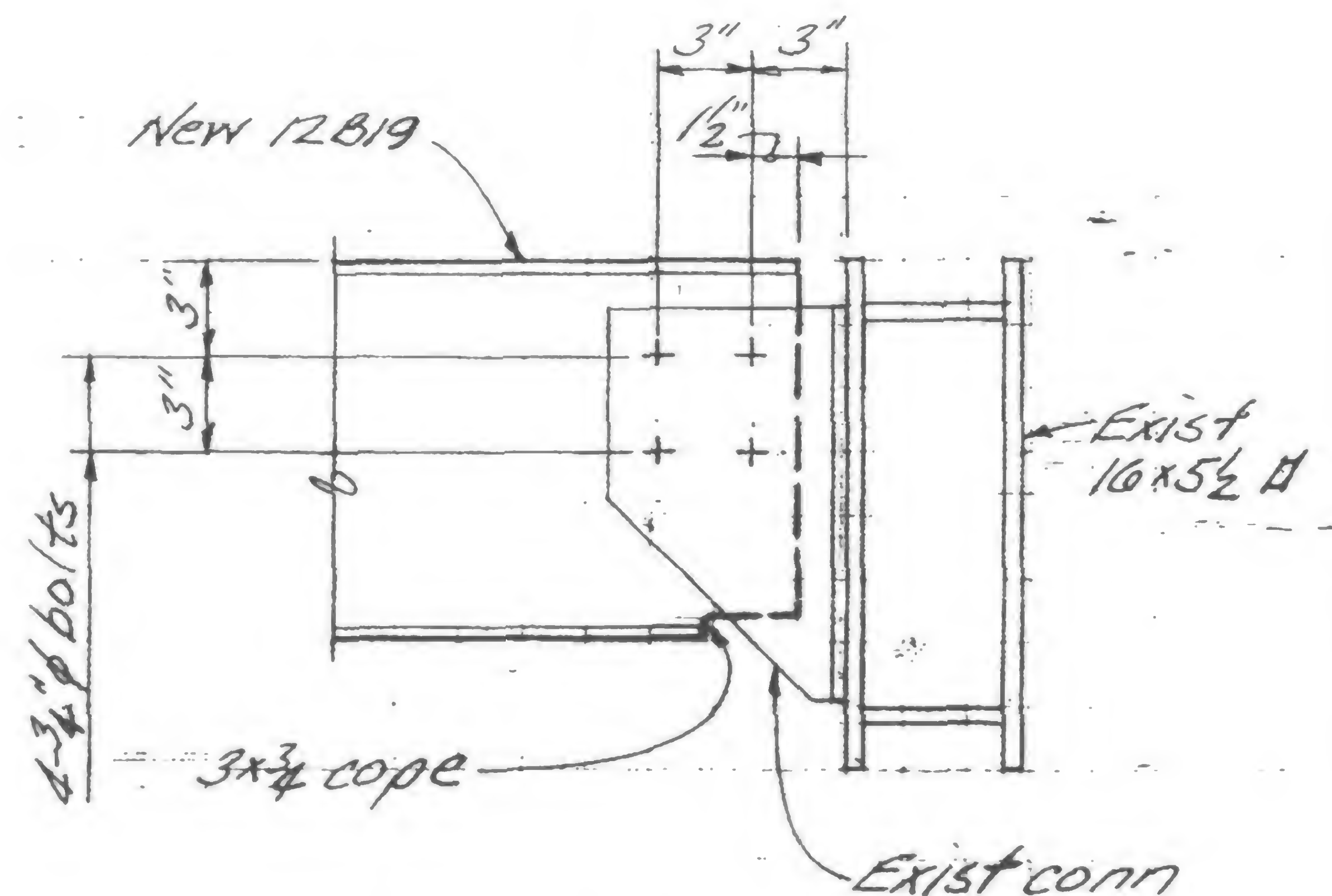
Drill new holes  
and install  
bolts or  
field weld  
as shown



Detail 106B



Detail 106C



Detail 106D



DESIGNED

**DRAWN**

REVIEWED

19-A-9811



PROJECT

THE WORLD TRADE CENTER

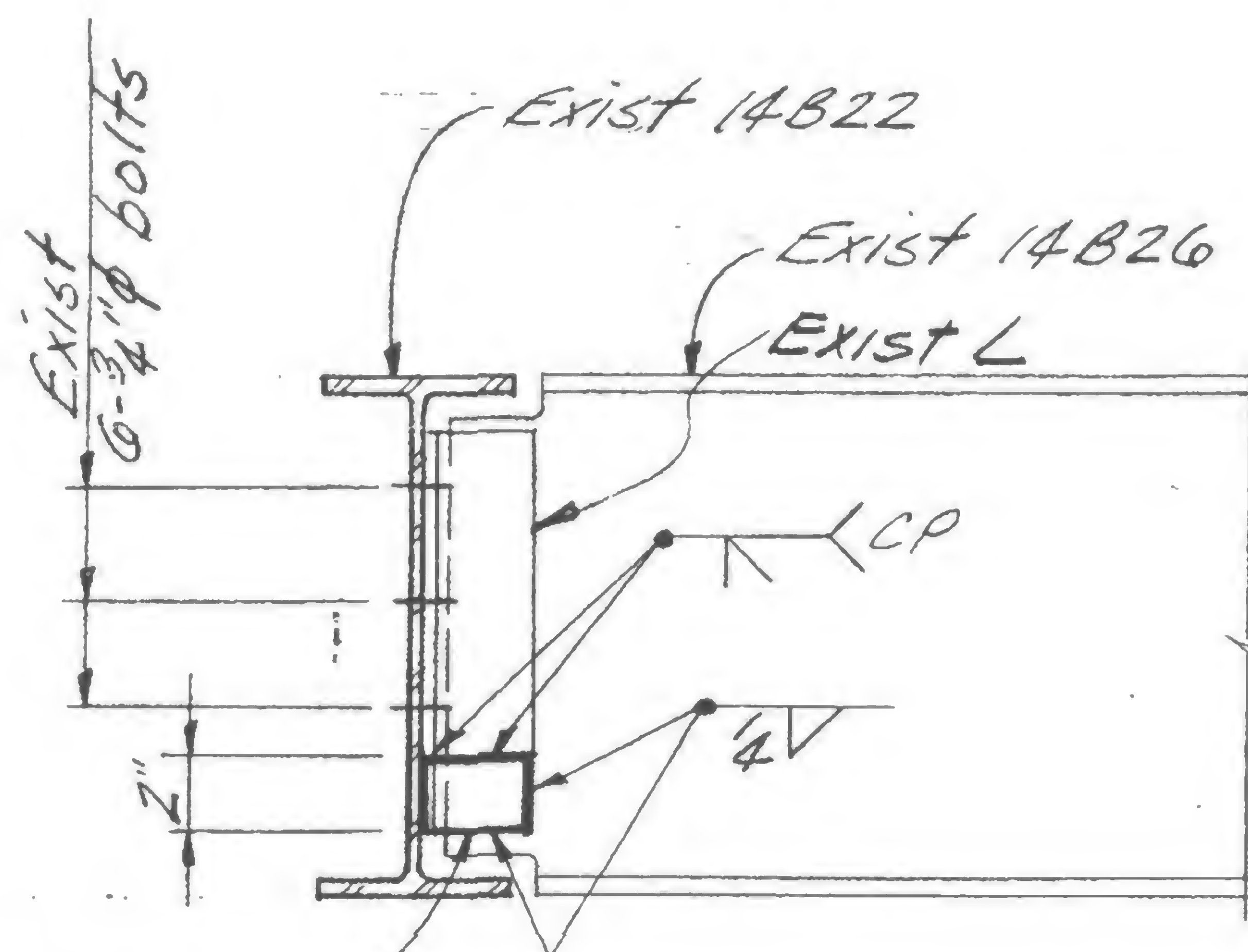
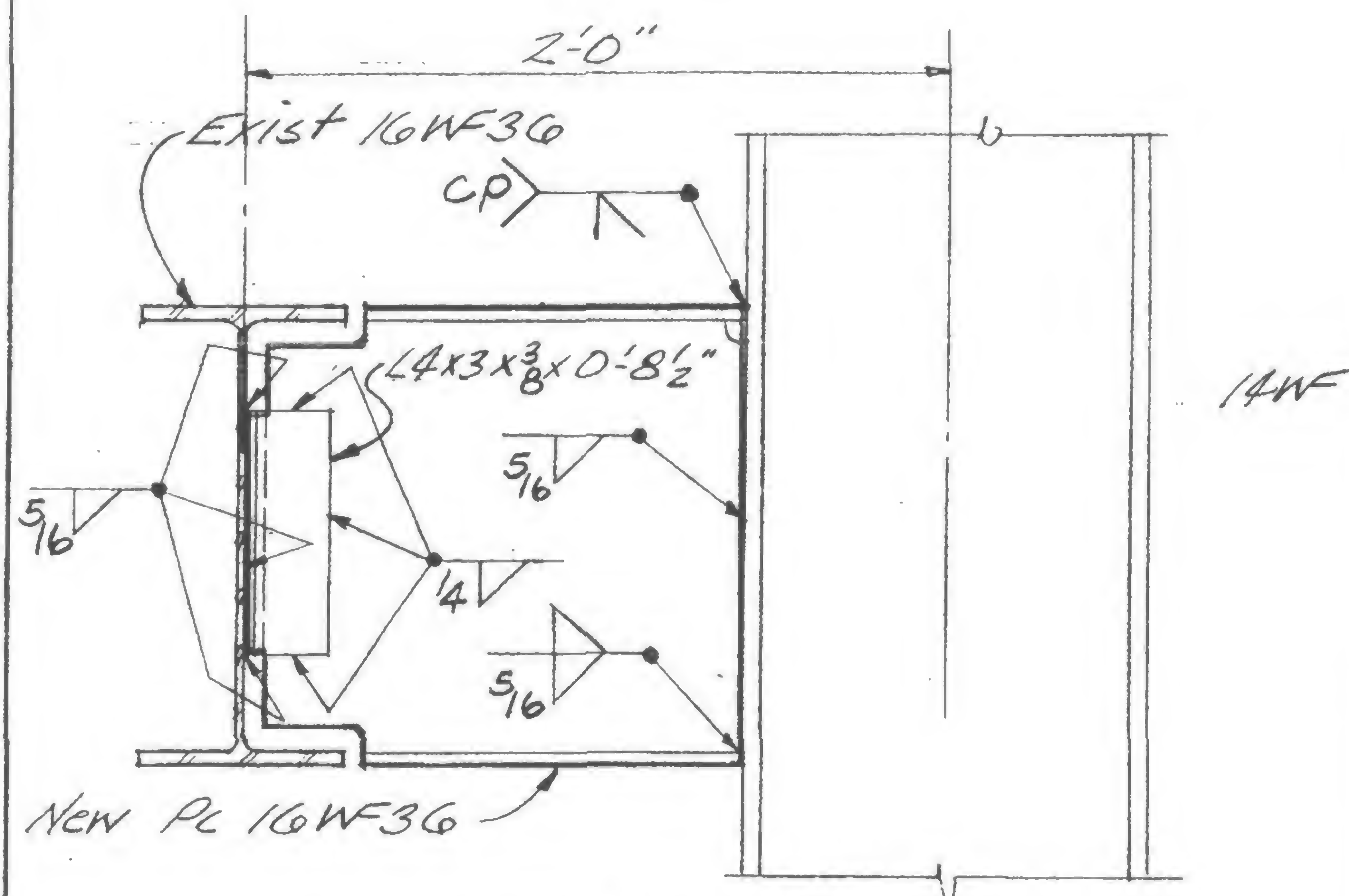
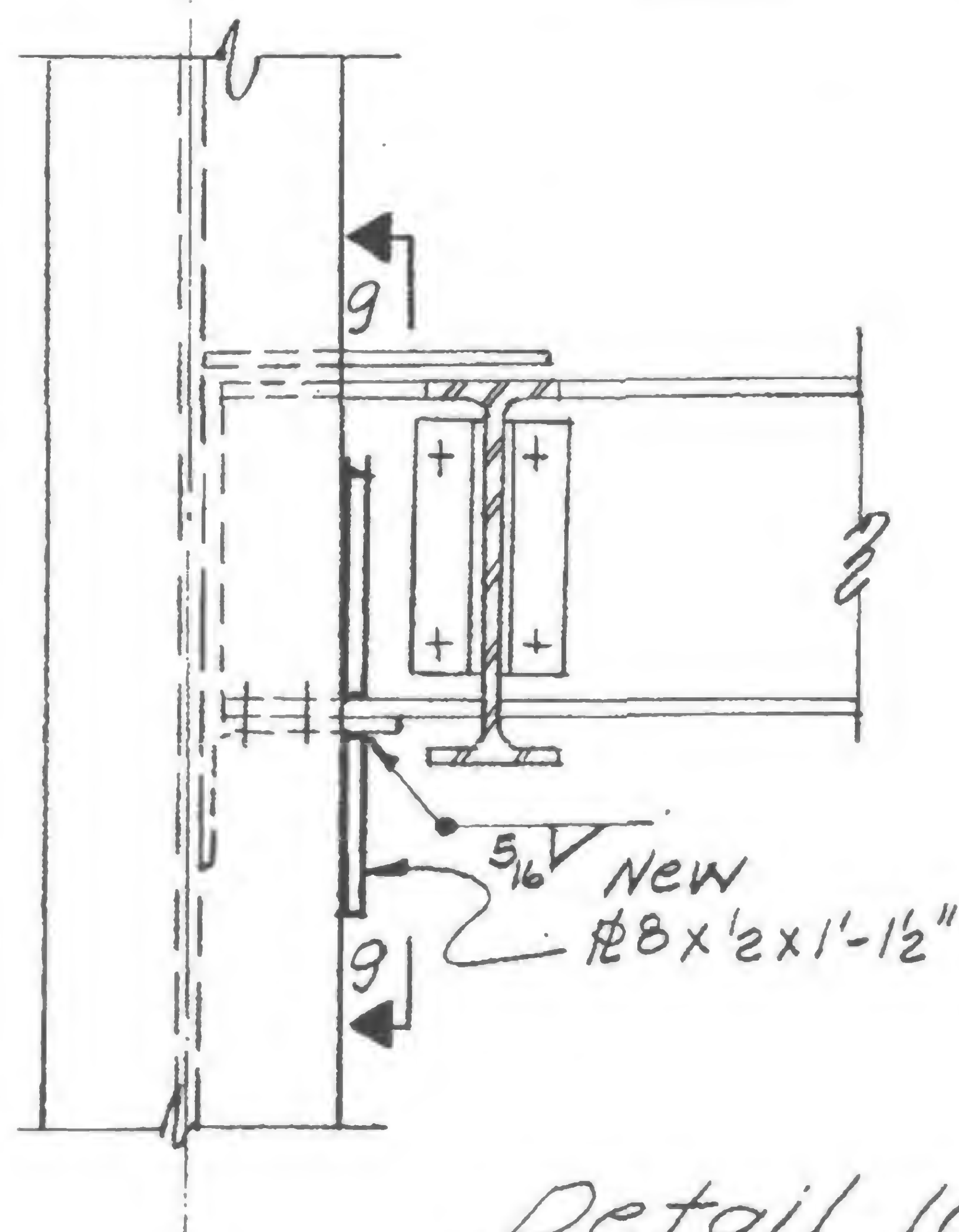
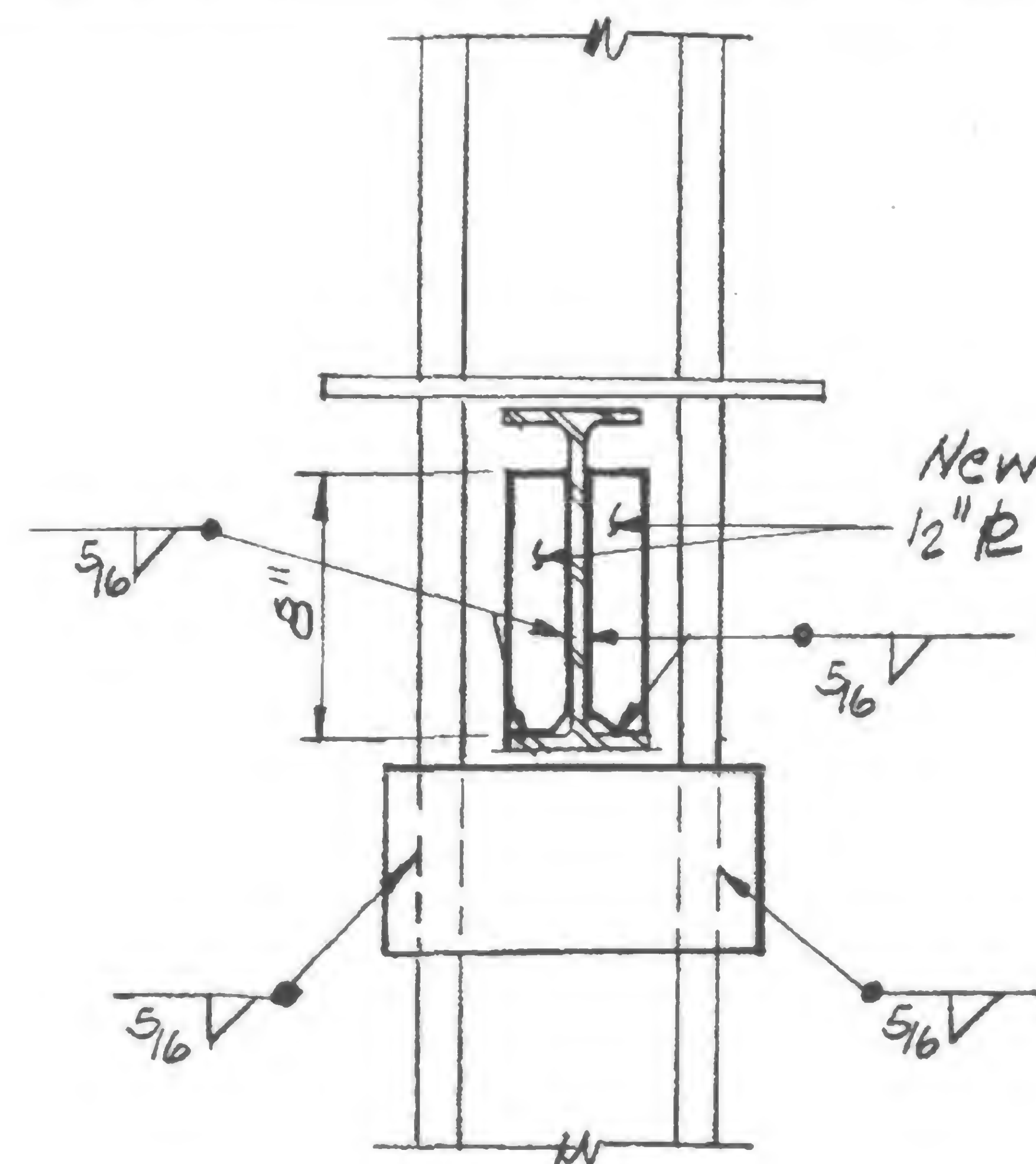
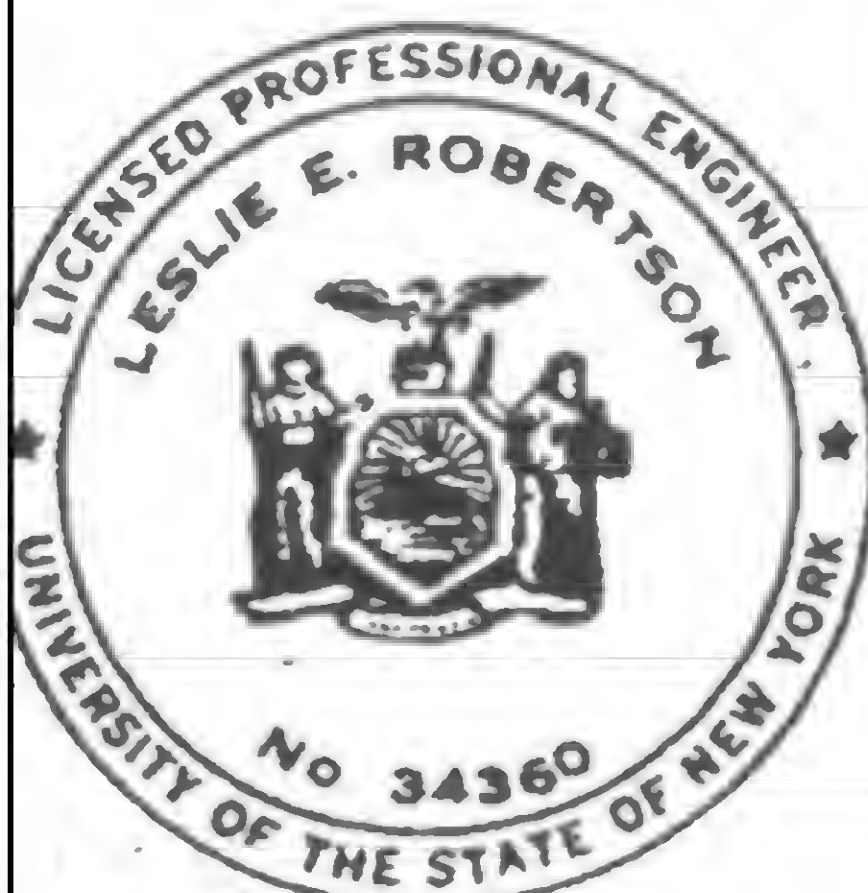
TITLE

FL. 106 - CONNECTION DETAILS

DATE

1/7/71

REVISIONS

Detail 106EDetail 106FDetail 106GSection 9-9

SIGNED

DRAWN

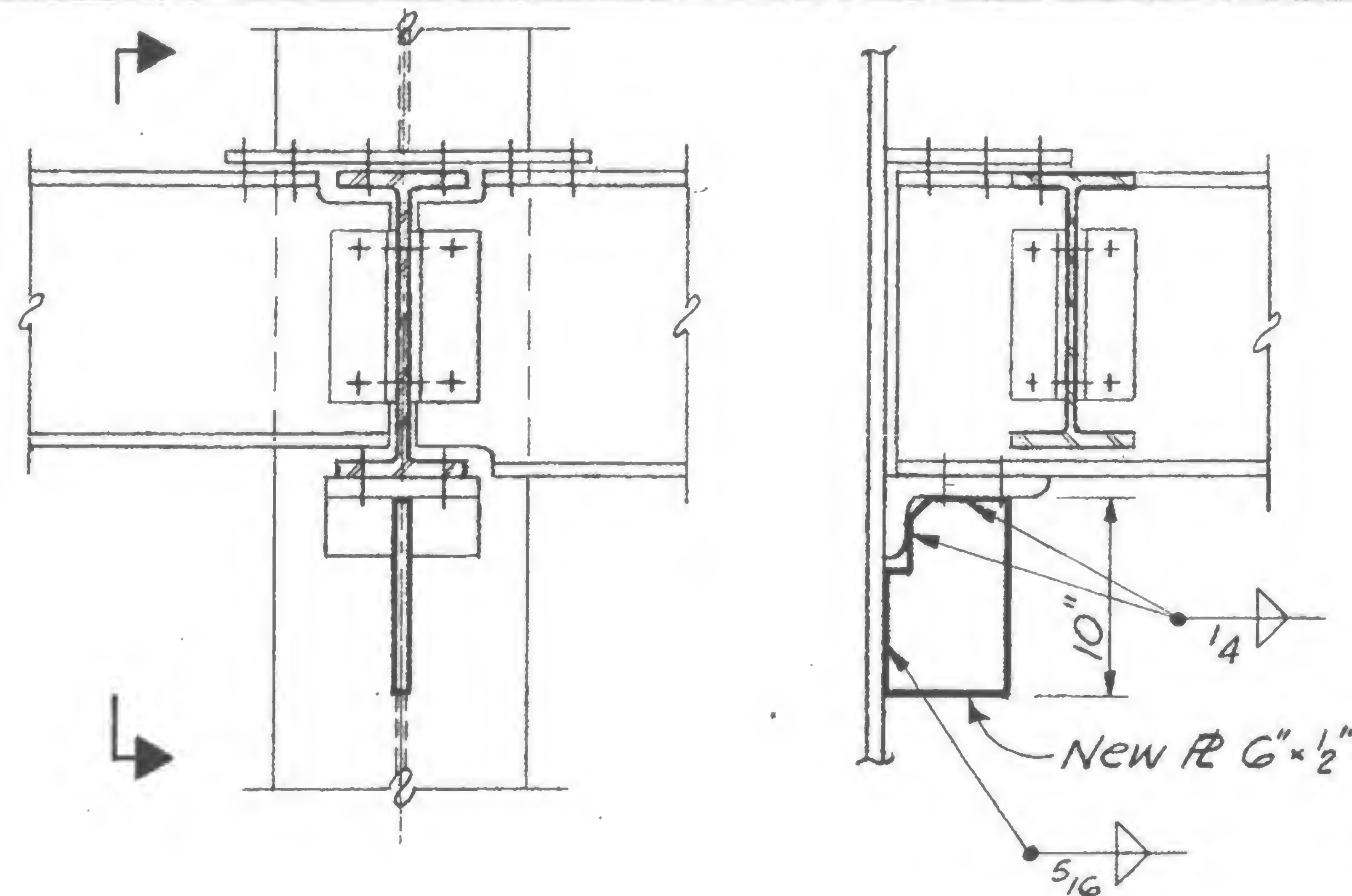
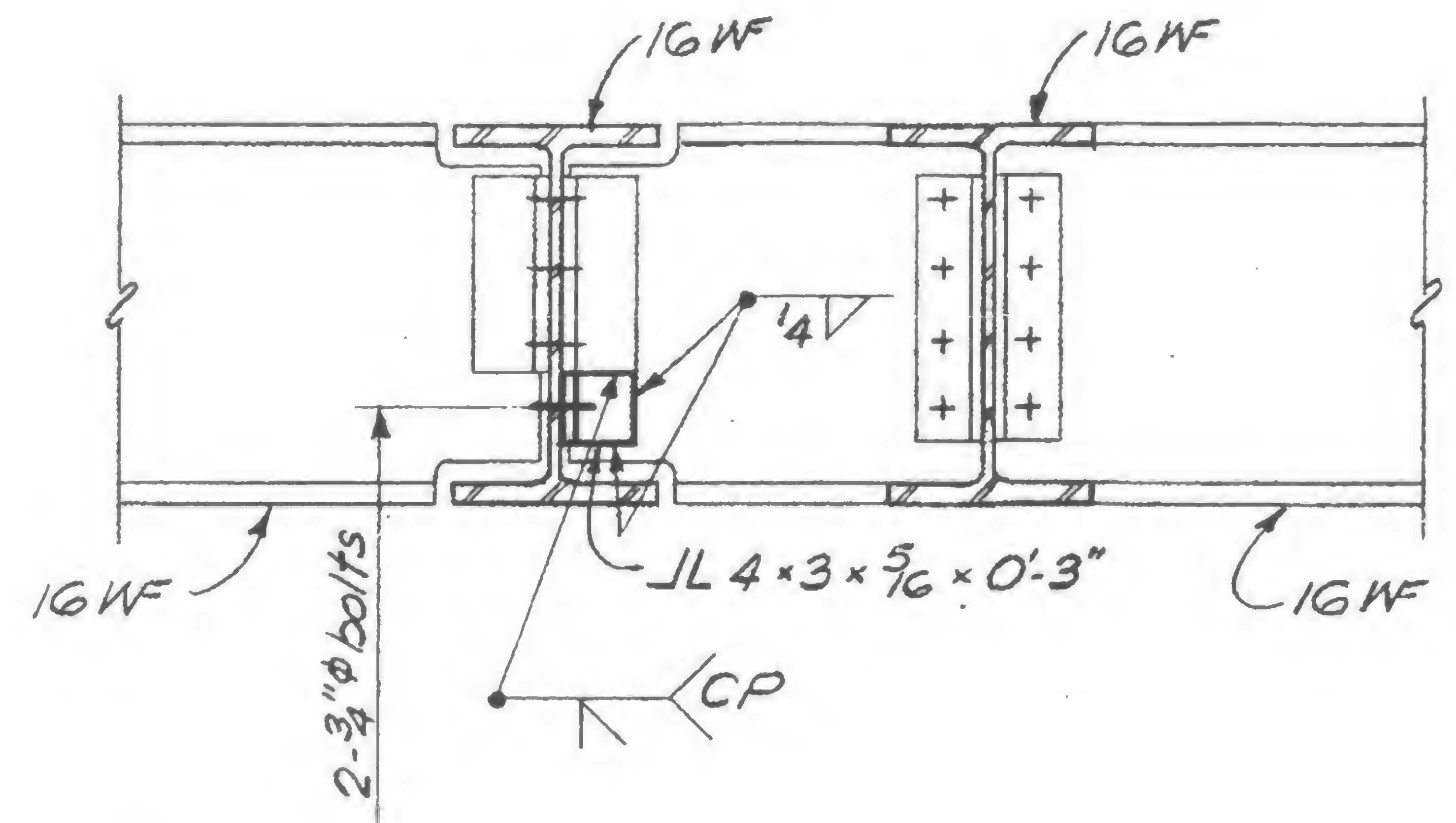
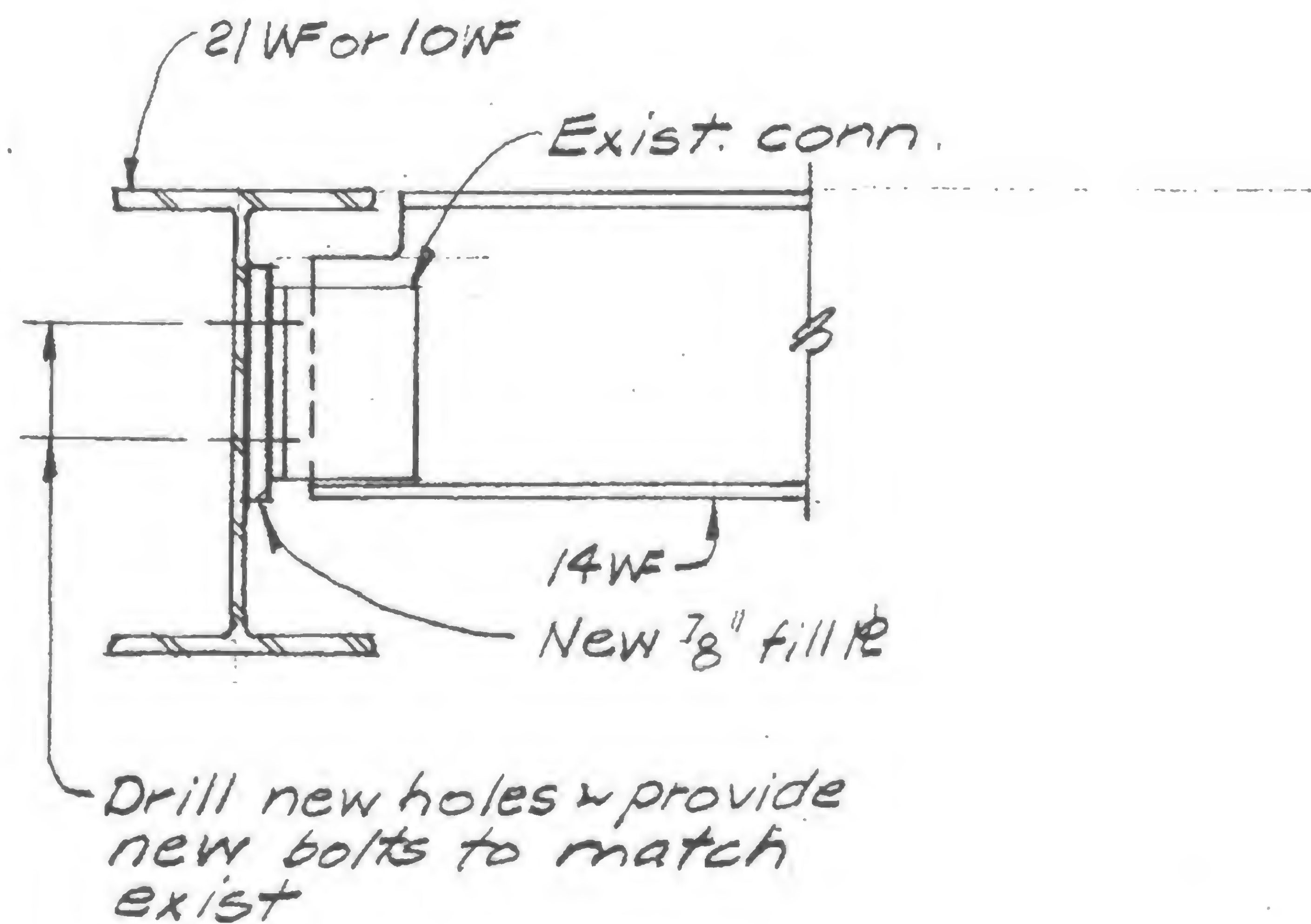
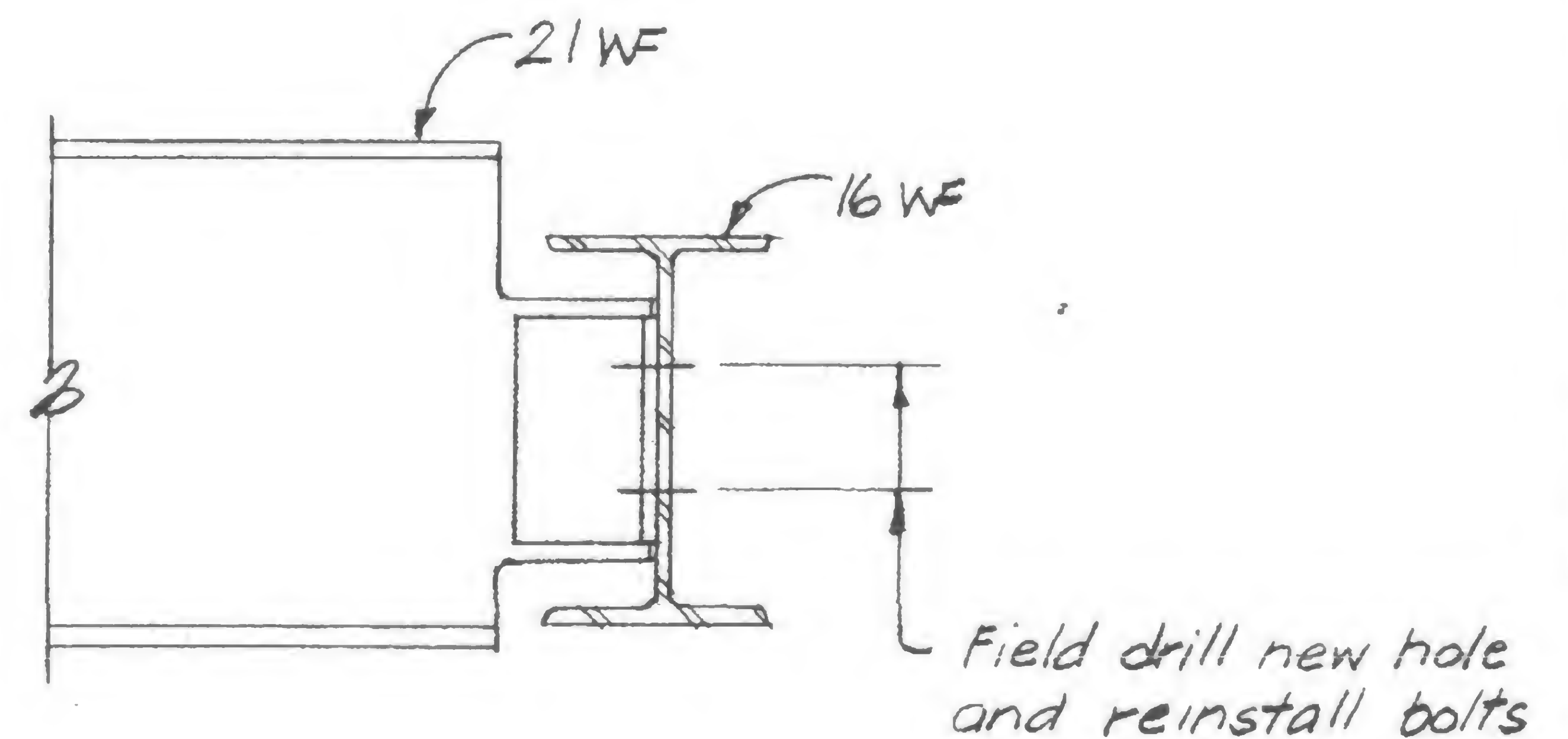
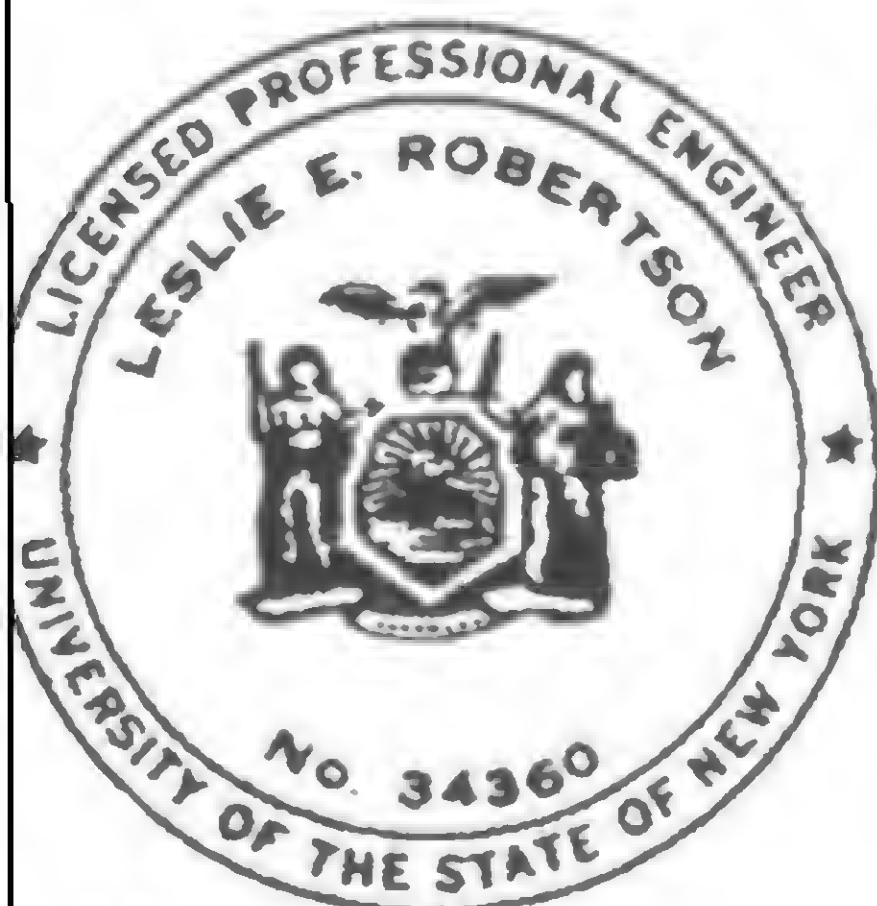
REVIEWED

19-A-981.2



PROJECT THE WORLD TRADE CENTERTITLE FL. 106 CONNECTIONSDATE 1-7-71

REVISIONS

SectionDETAIL 106 HDETAIL 106 KDETAIL 105 ADETAIL 105 B

IGNED

DRAWN

S.C.

REVIEWED

19-A-981.3



PROJECT

THE WORLD TRADE CENTER

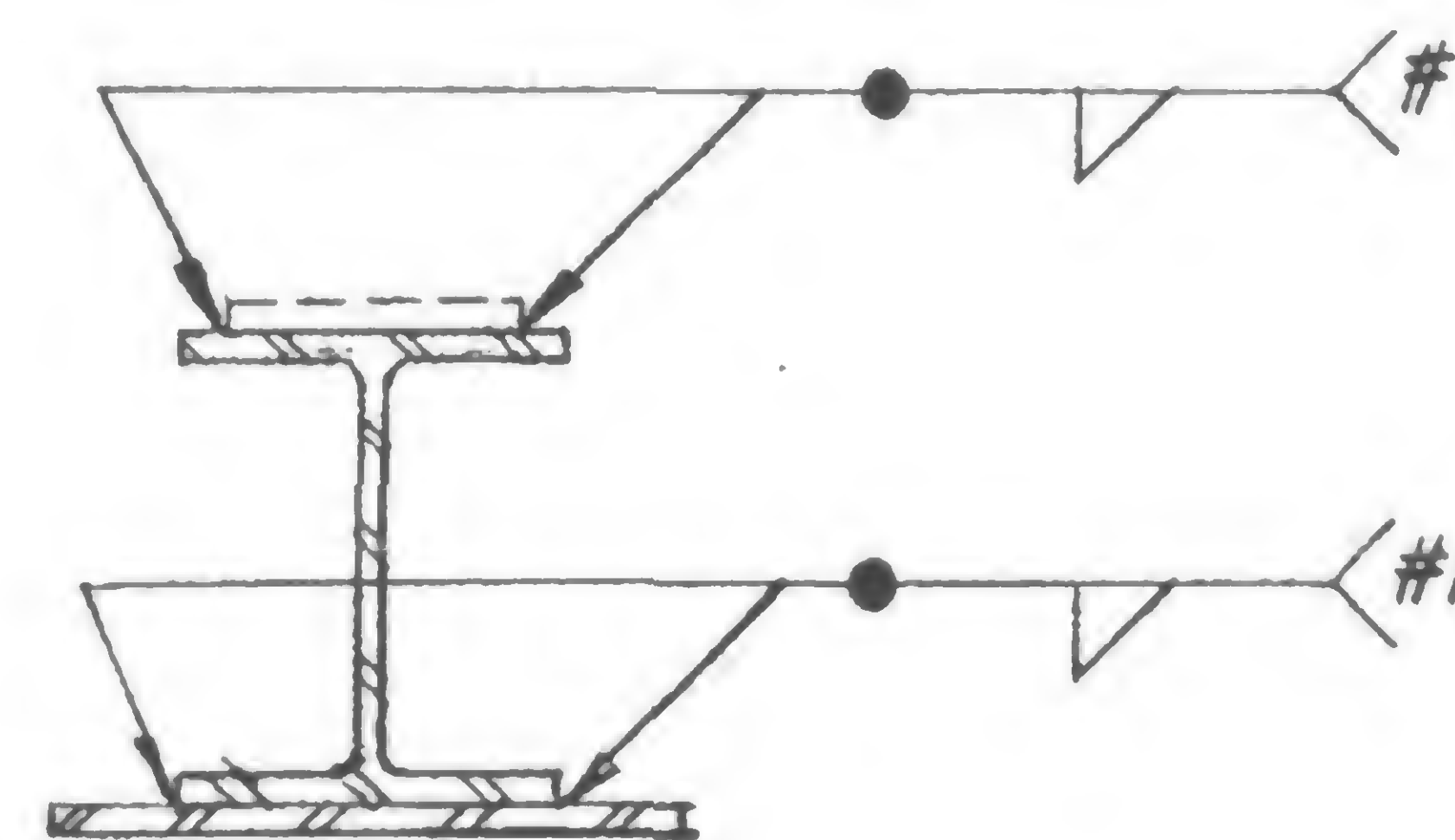
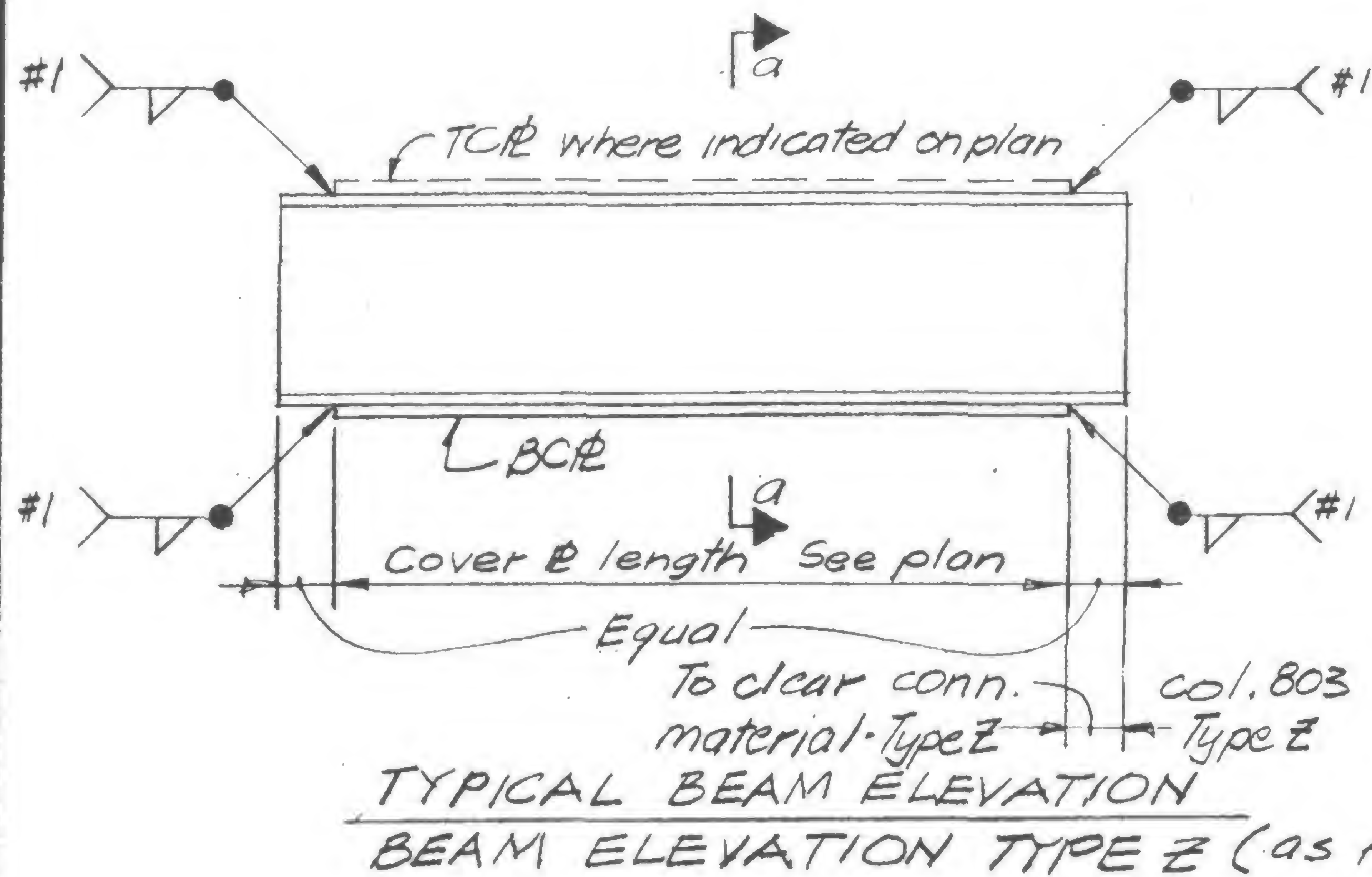
TITLE

FL 106 - BEAM COVER #

DATE

1/7/71

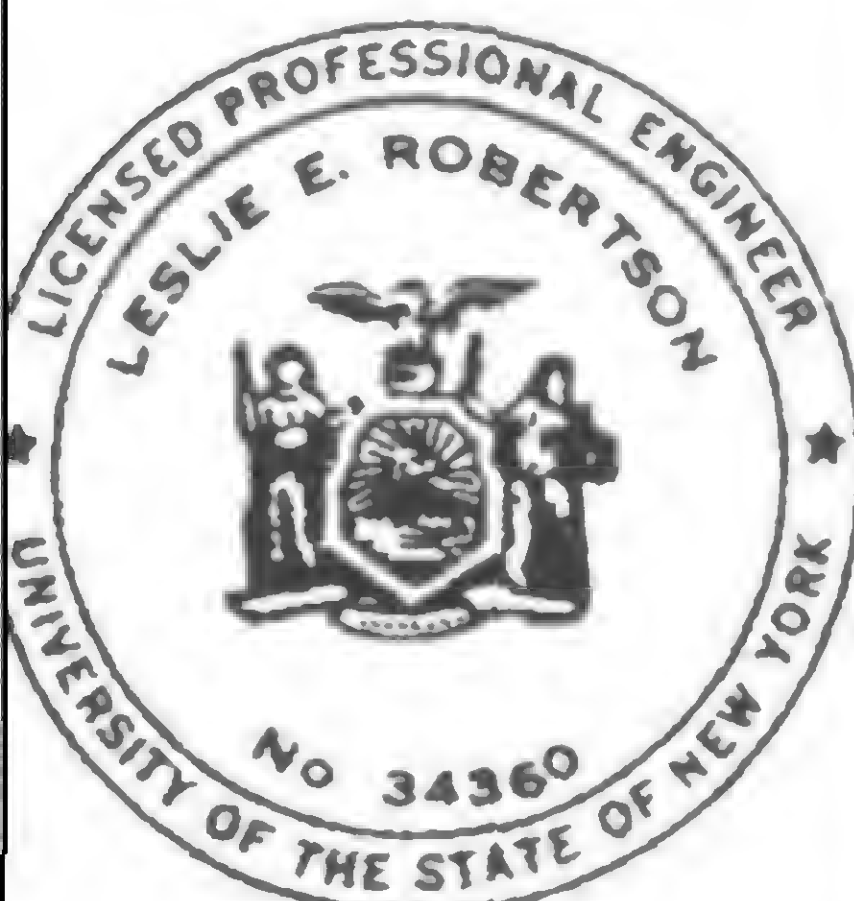
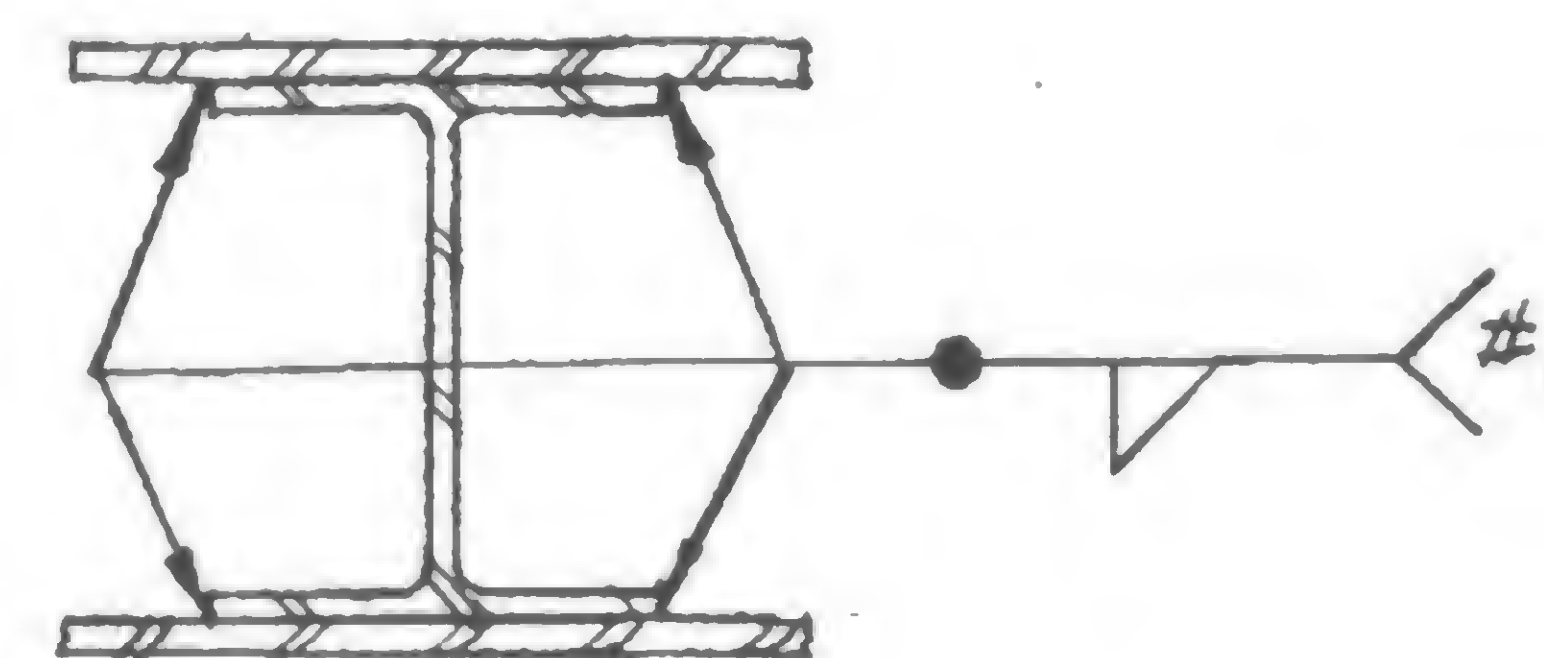
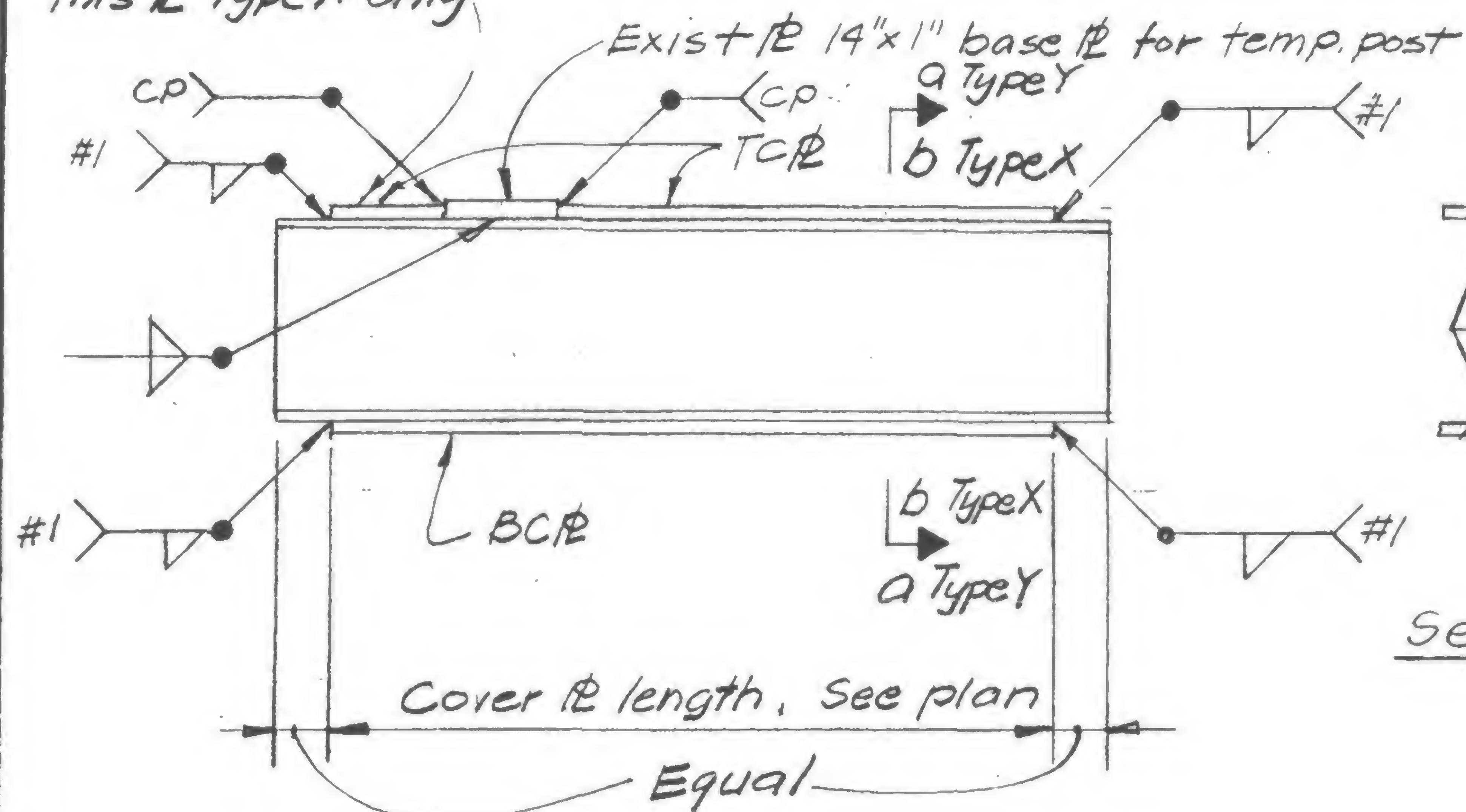
REVISIONS



## WELD #1 SCHEDULE

COVER # THICKNESS	WELD #1
3/8 & 1/2	1/4
3/4 & 7/8	5/16
1/4	3/8

This # Type X only



SIGNED

DRAWN

P. O. Zeh

REVIEWED

A-A-982.1



PROJECT

THE WORLD TRADE CENTER

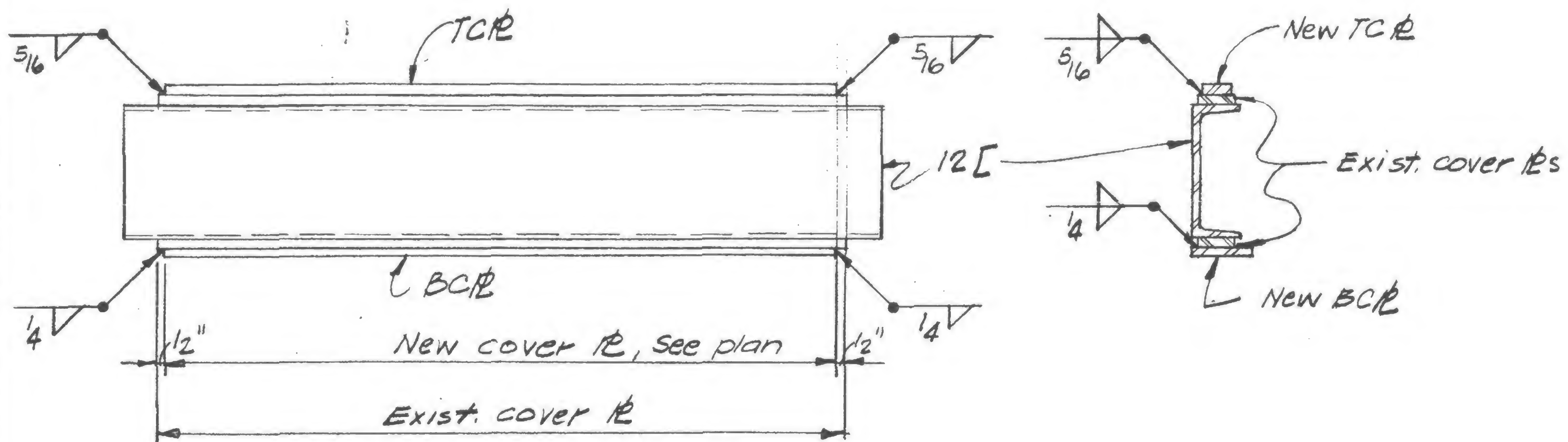
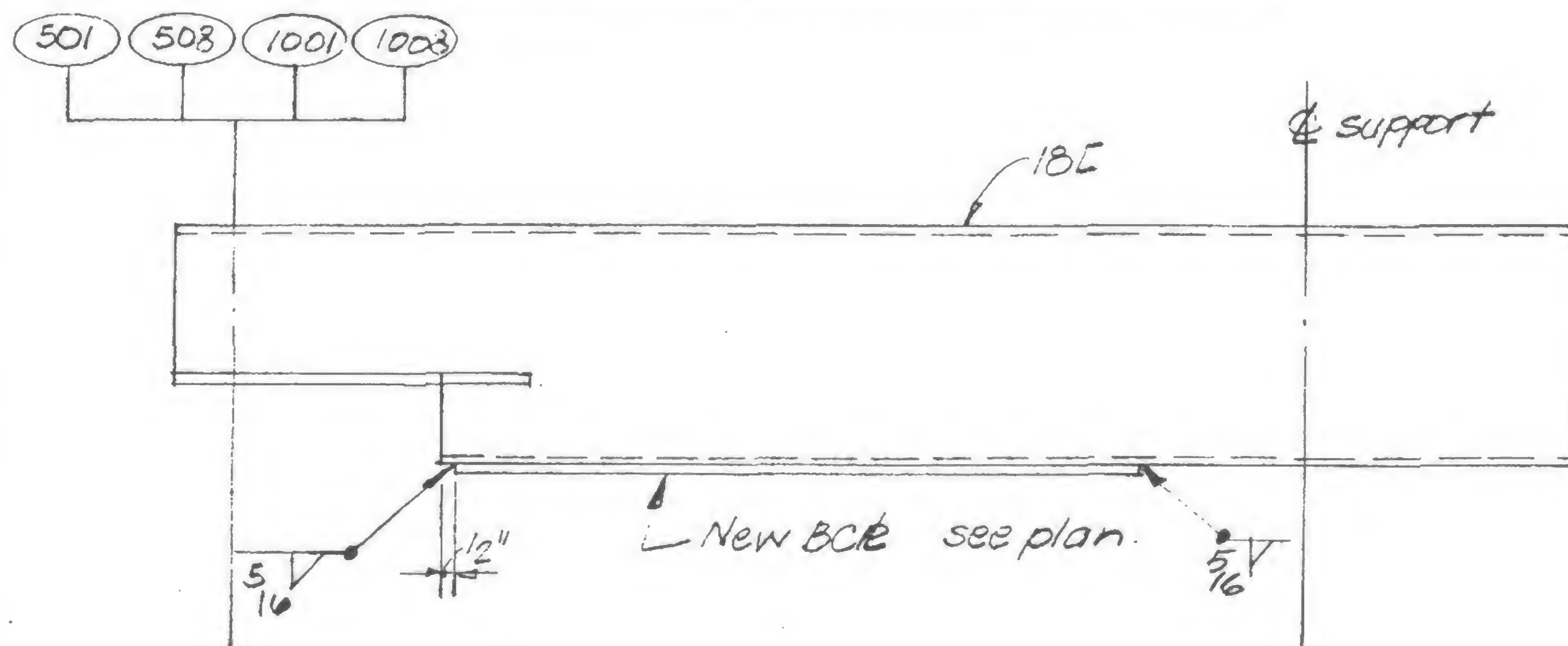
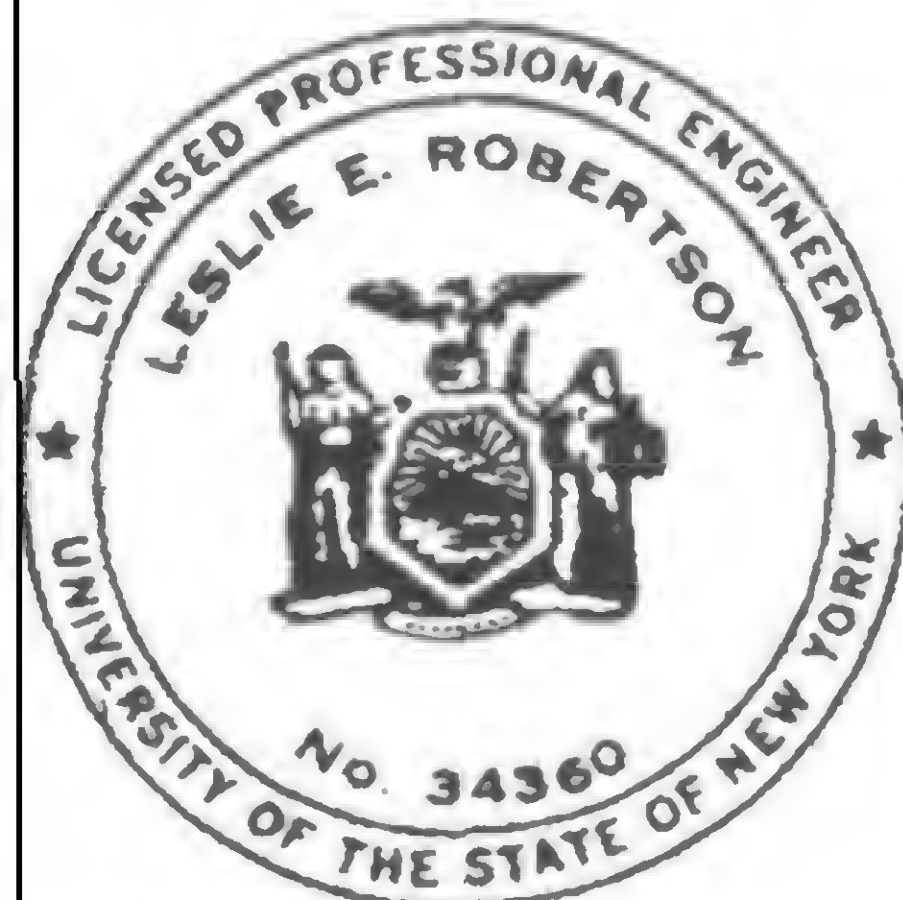
TITLE

FL. 106 BEAM COVER ~~12~~

DATE

1/7/71

## REVISIONS

BEAM ELEVATION TYPE WTYPE V

SIGNED

DRAWN

REVIEWED

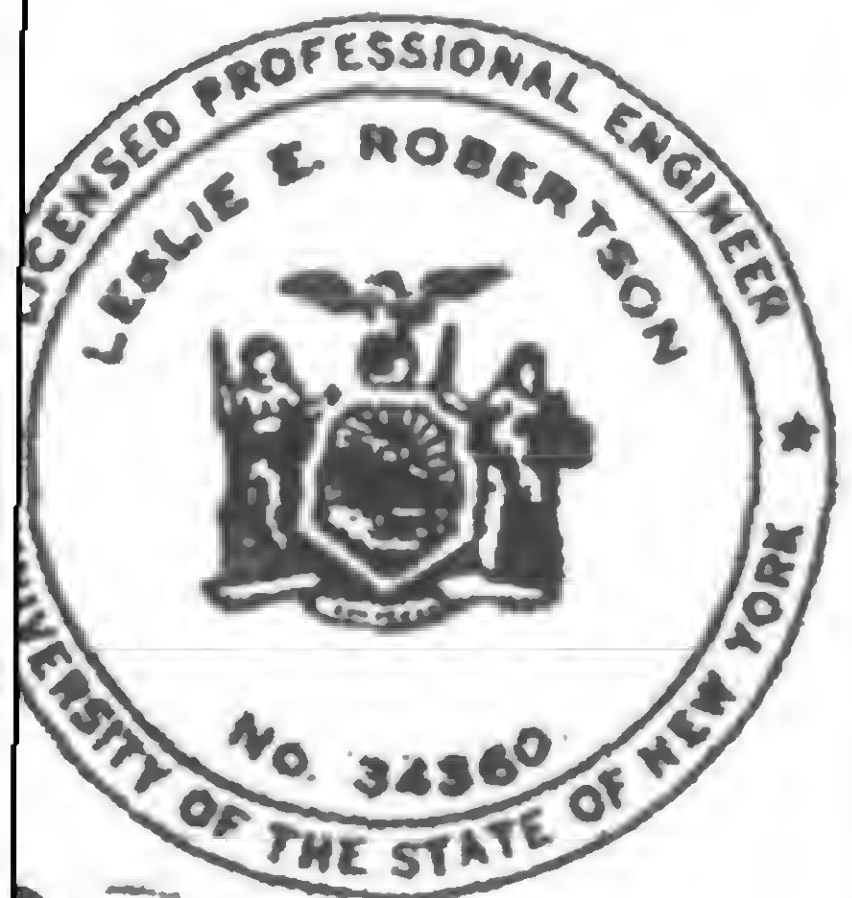
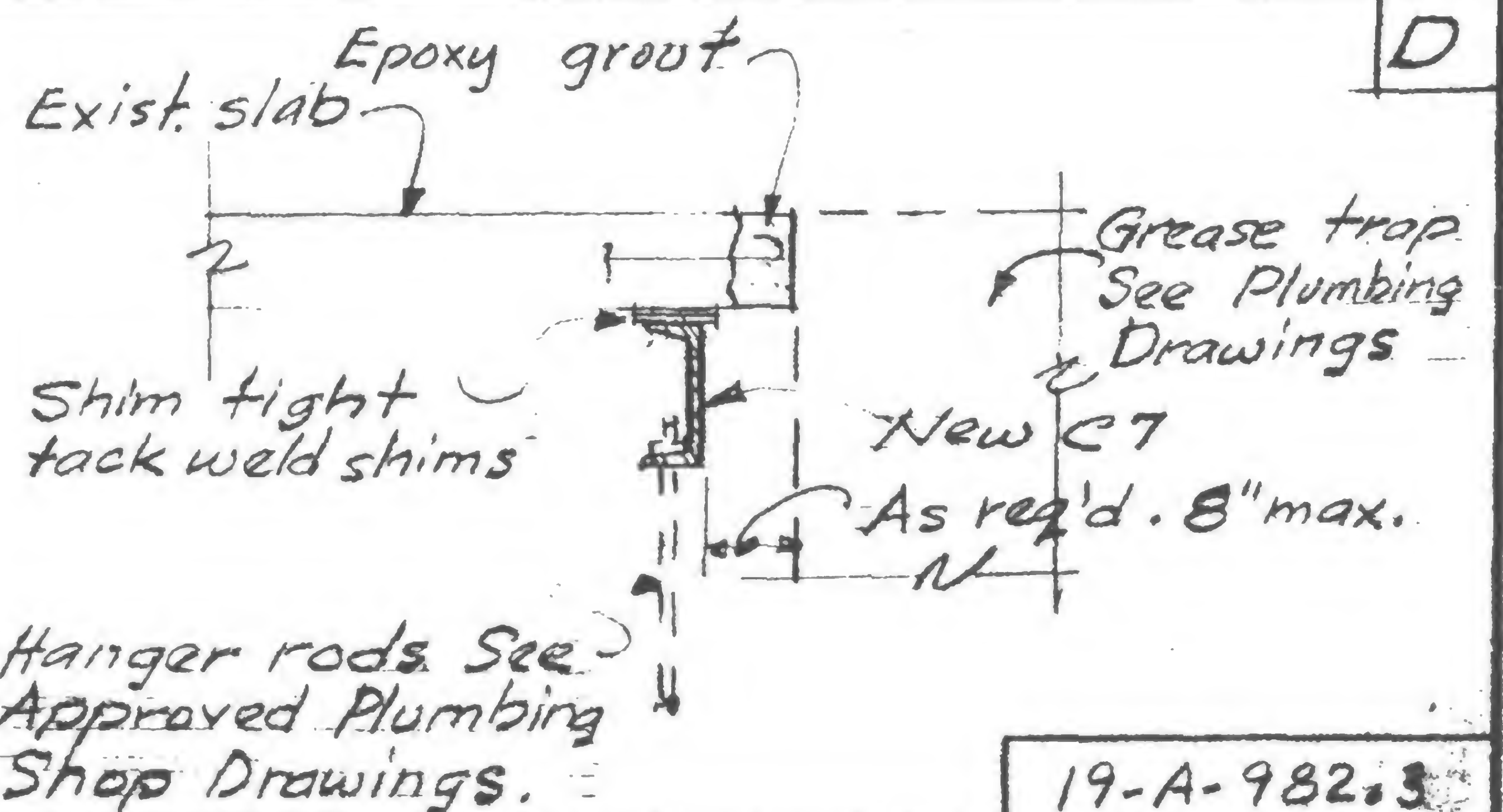
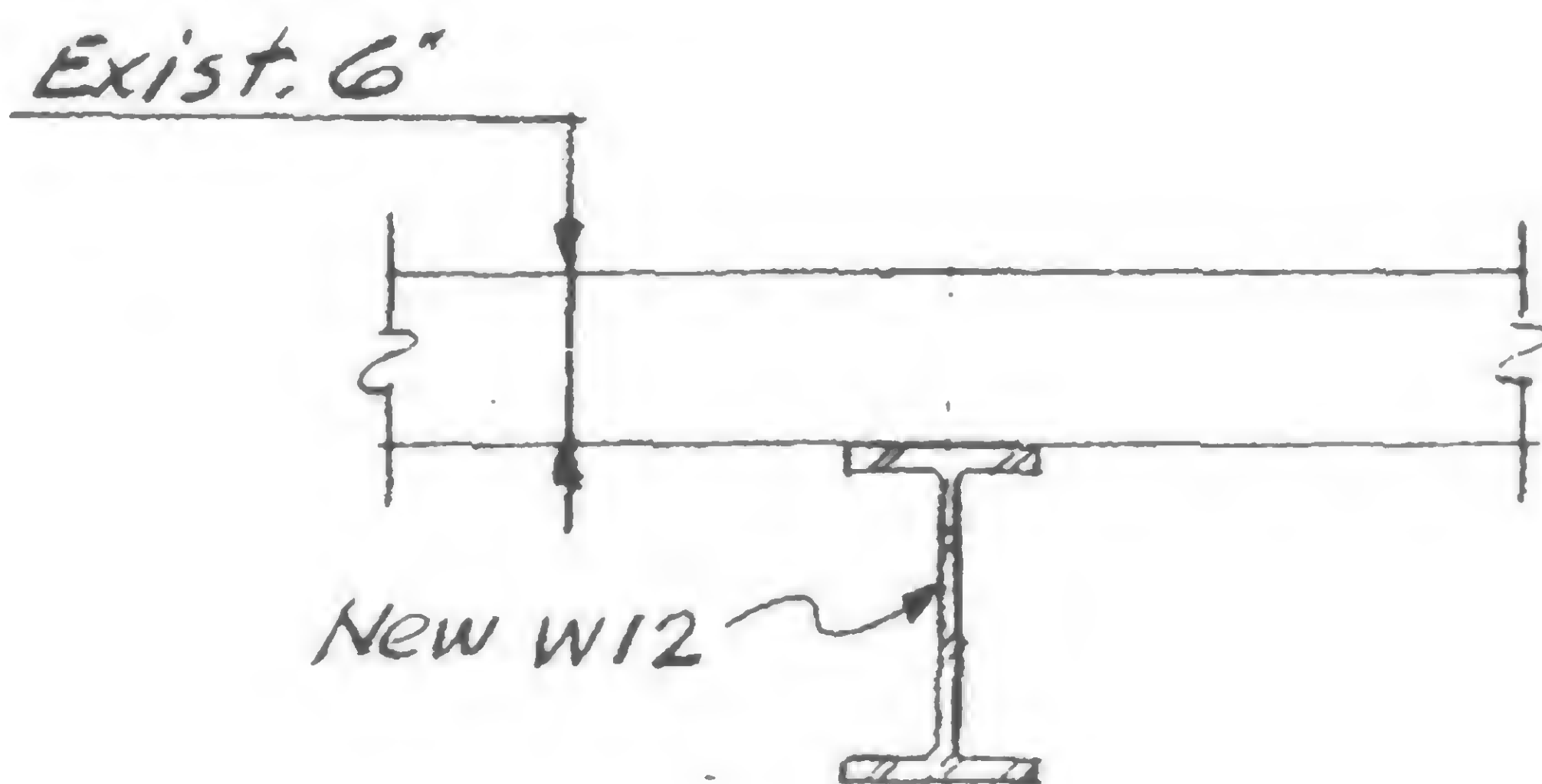
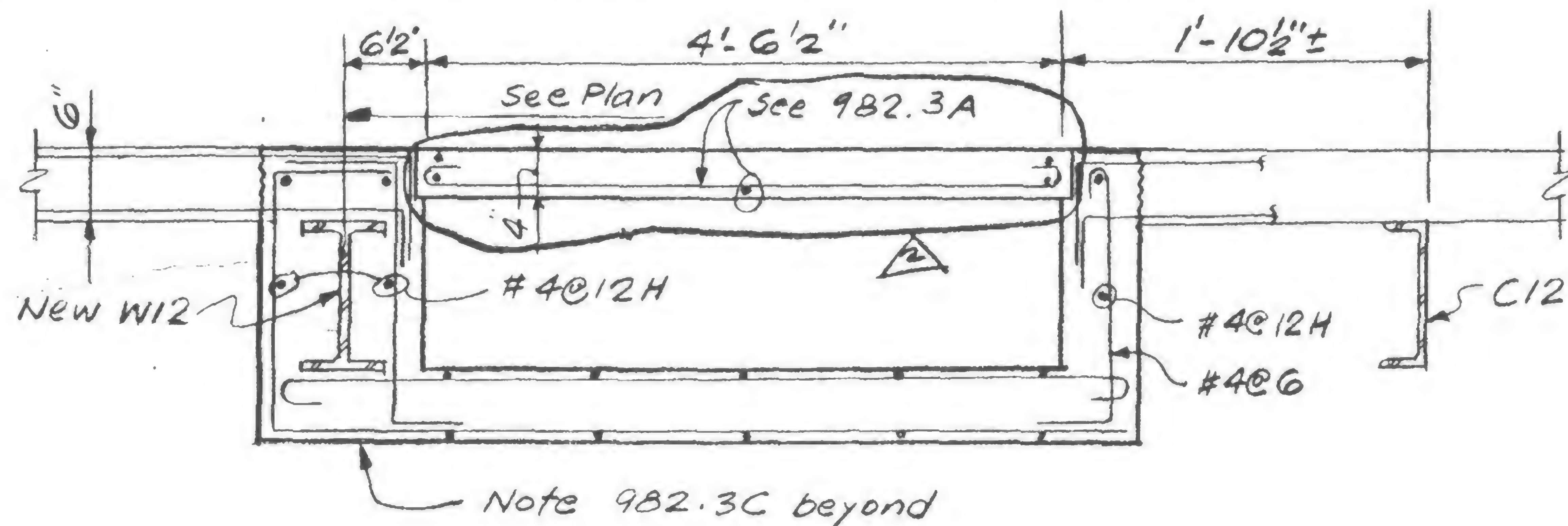
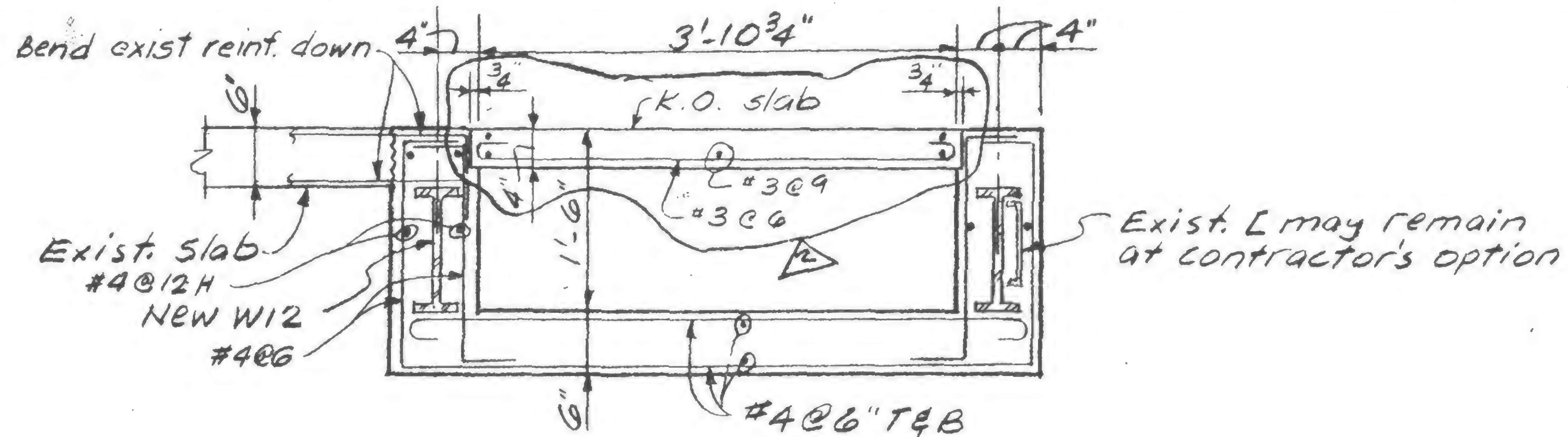
19-A-982.2



VISIONS

5/5/79

10/15/79



BNEB

DRAWN

REVIEWED

WCB



7/30/71

10/6/71

5/9/79

985A

985A

988C

988A

938A

988A

11231-0-8

11231-0-25

985A

933E

935B

938B

934A

11231-0-37(A26)

11231-0-37(A26)

New web reinforcing.  
See 19-A-985 & 988  
as indicated.

New cover # See  
19-A-989 as indicated

985A

988A

938A

985C

933E

935E

985D

11231-0-37



## Structural & Civil Engineers

TITLE FLOOR TRUSS C 32 TI - FL. 106

DATE 1-7-71

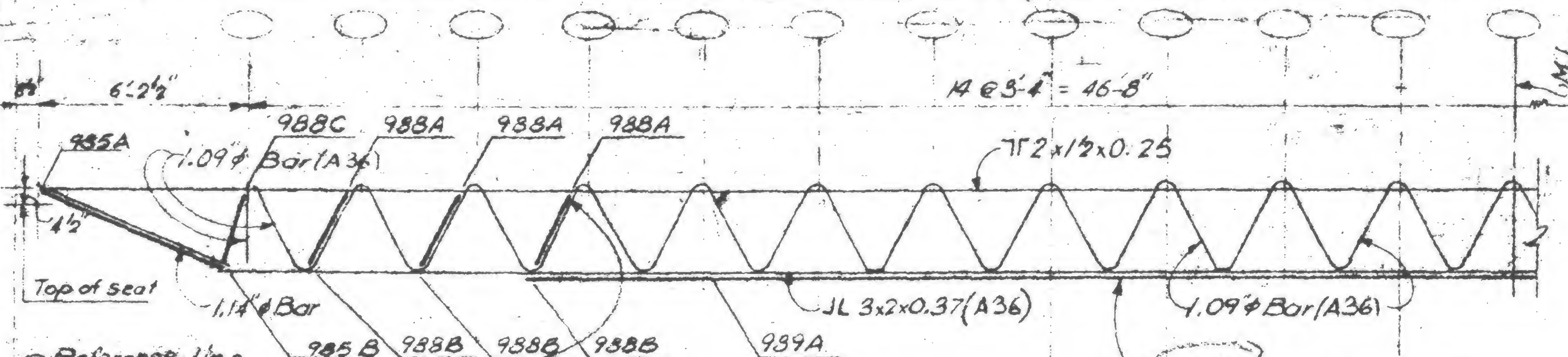
# VISIONS

16777

7/30/71

Printed  
10/6/71

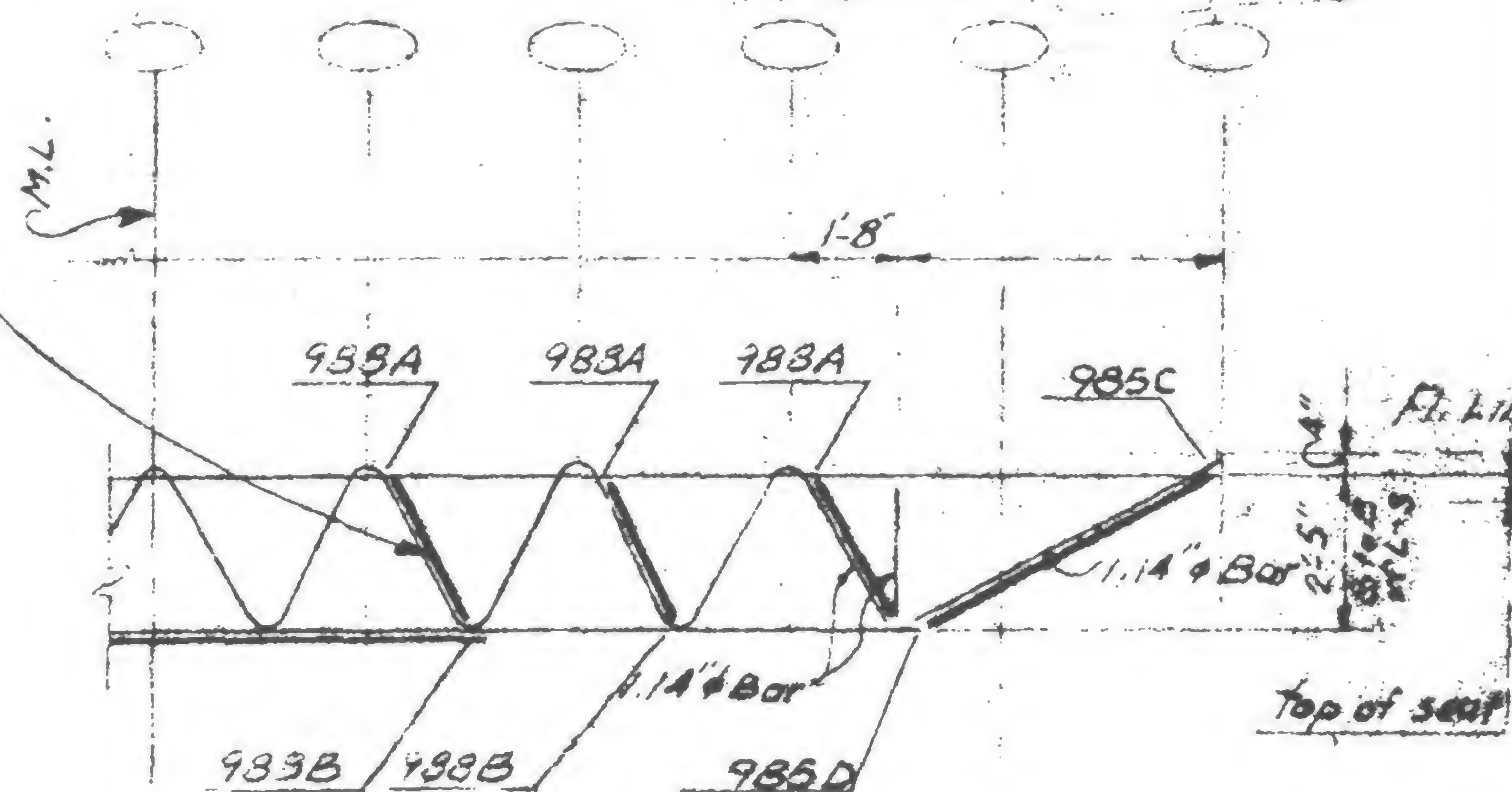
5/9/79



Reference line  
exterior columns

Exist. web reinforcing  
See 19-A-985 & 988  
as indicated.

Exist. cover # See  
19-A-989 as indicated



**SIGNED**

PRAYN

19-A-9831A



## Structural & Civil Engineers

TITLE FLOOR TRUSS C32 T1 - FI. 106

DATE 1-7-71

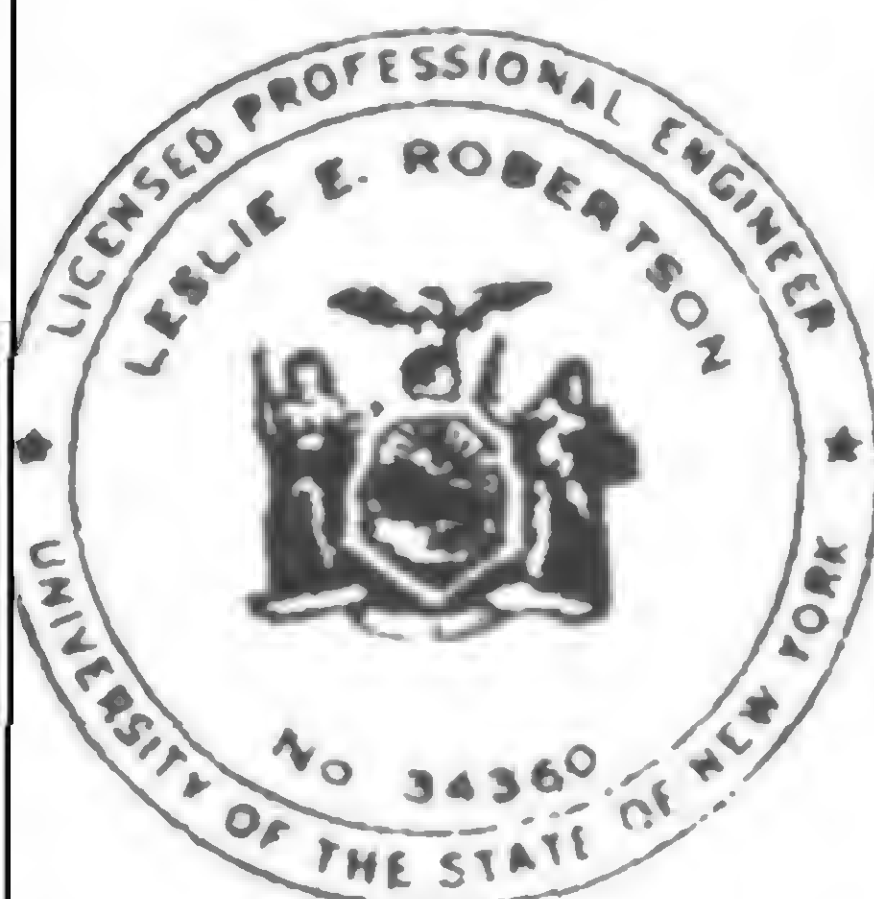
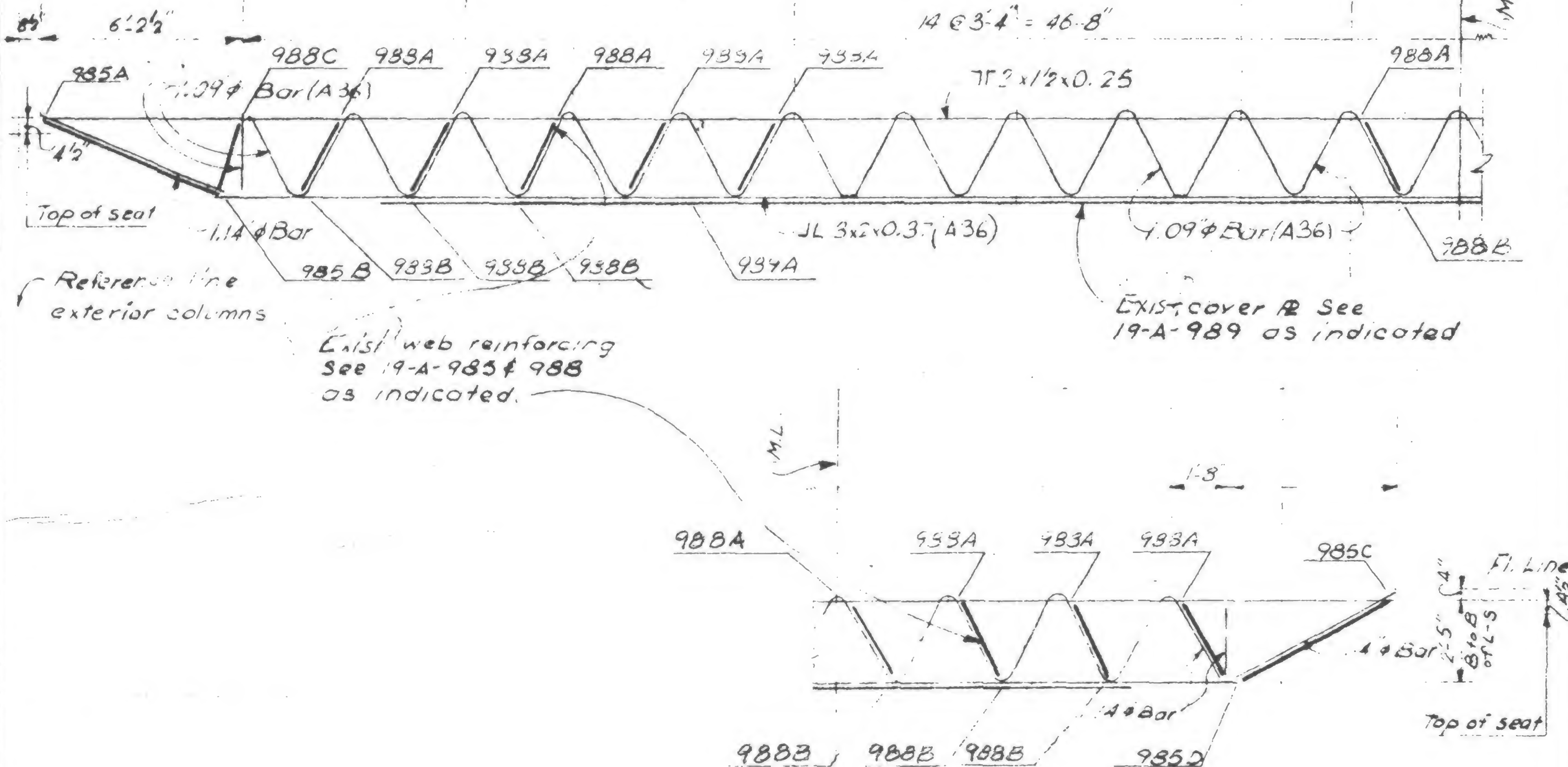
## REVISIONS

1/27/71

7/30/71

Printed  
10/2/71

5/9/79



DESIGNED

**DRAWN**

REVIEWED

19-A-983-1B

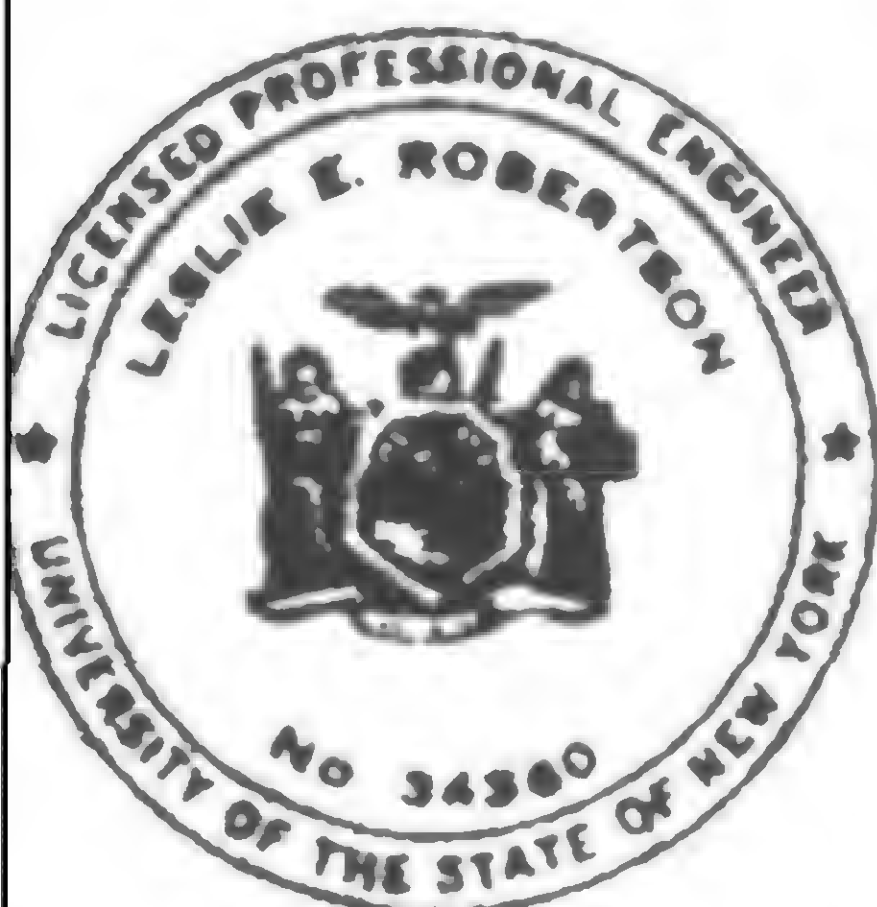
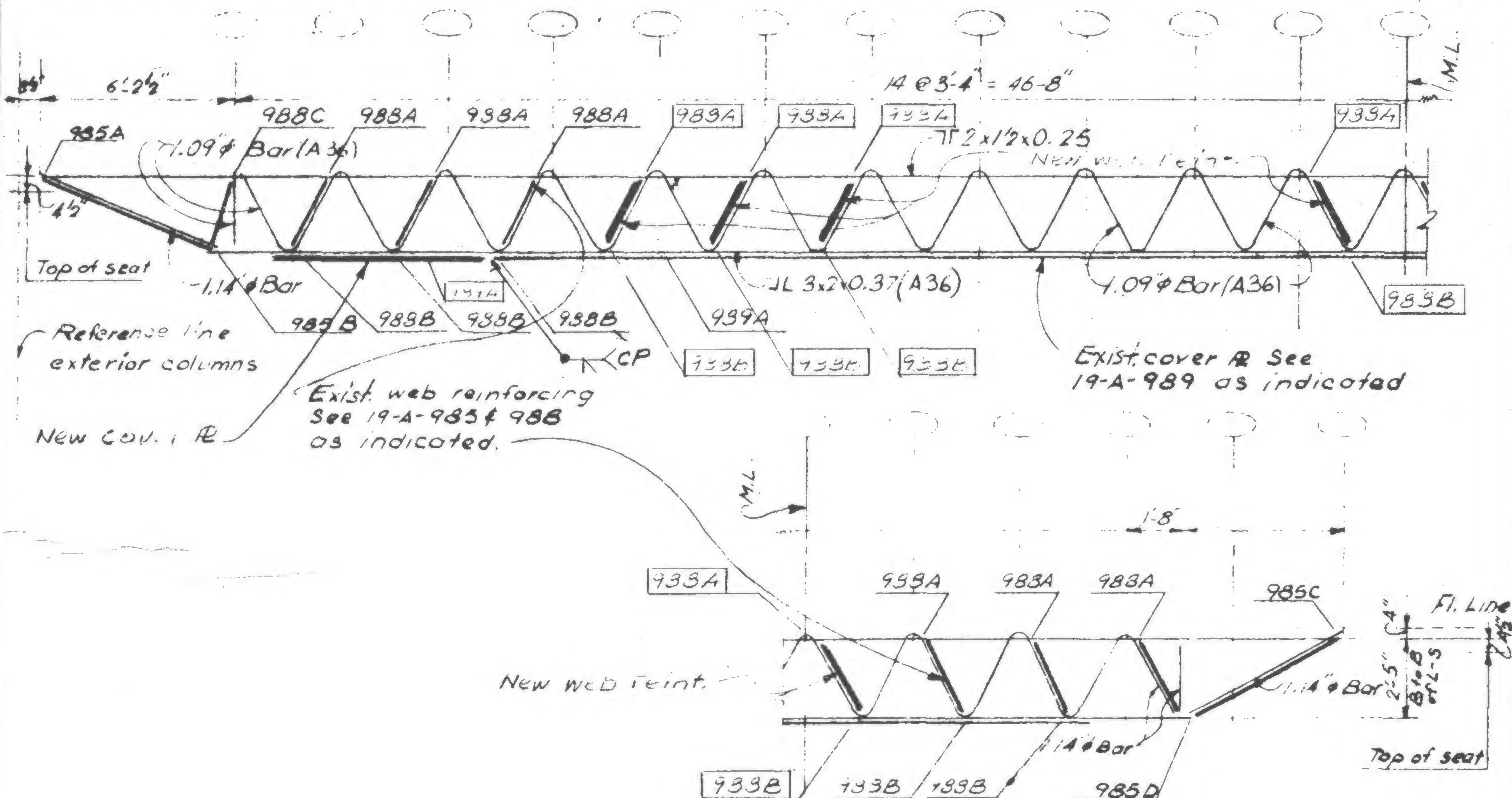


## Structural & Civil Engineers

TITLE FLOOR TRUSS C 92 T1 - FI. 106

DATE 5-9-79

## REVISIONS



**SIGNED**

May 1998

## REVIEWS

19-A-983.1C



19-A-983-1D



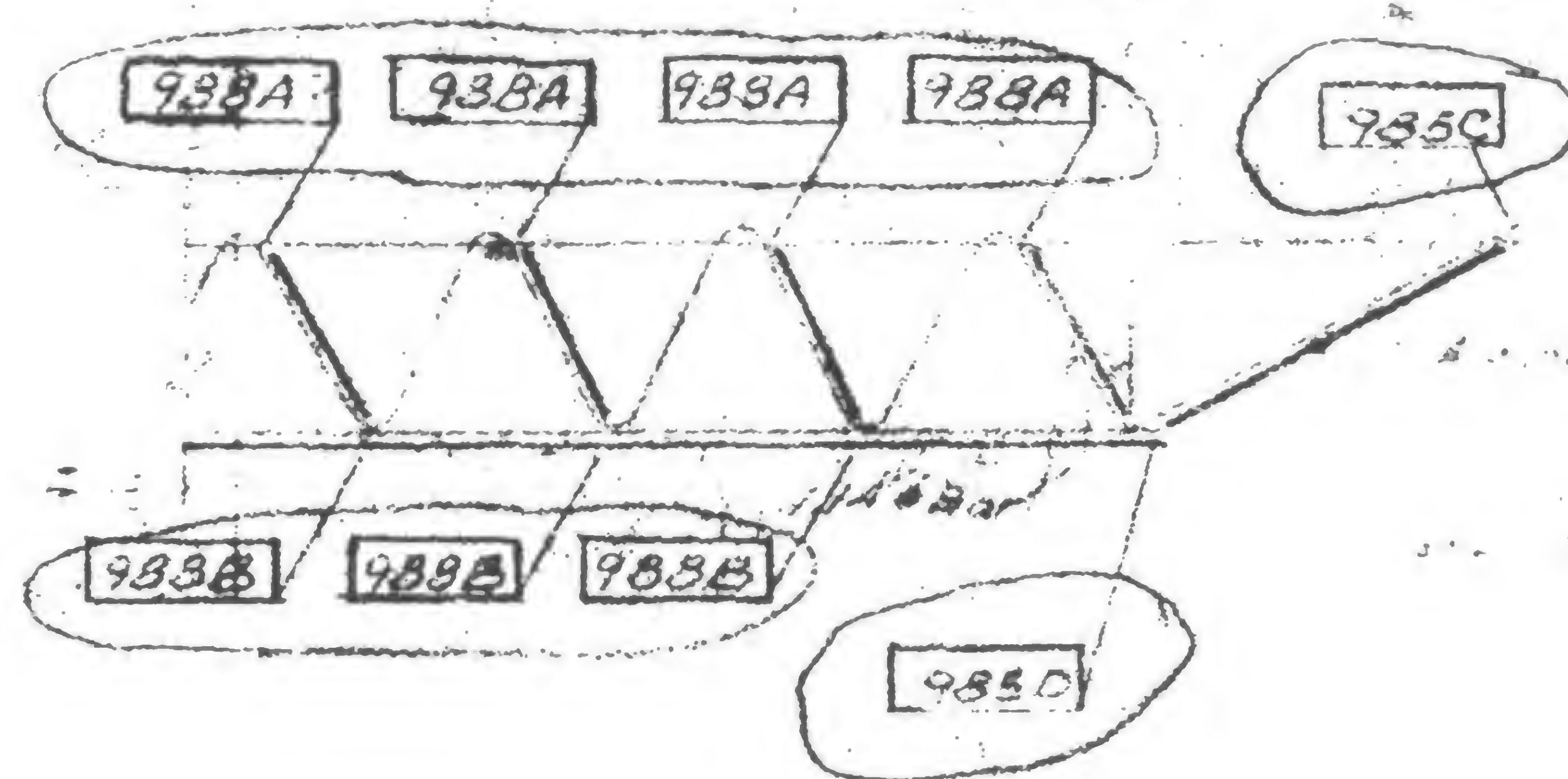
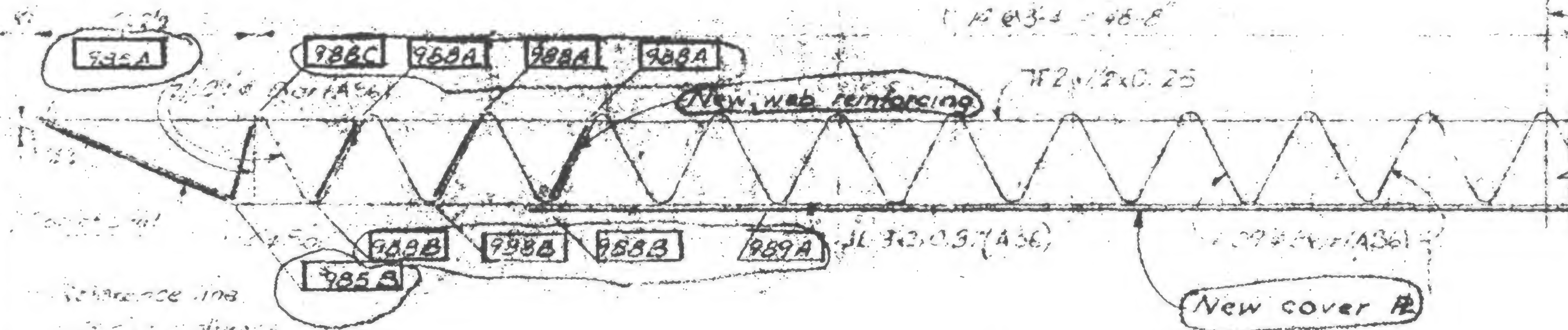
REVISION

027/71

7/30/71

10/6/71

5/9/79



was

19-A-983.2



PROJECT THE WORLD TRADE CENTER

TITLE FLOOR TRUSS CB2 TI - Ft. 106

DATE 7-7-71

## REVISIONS

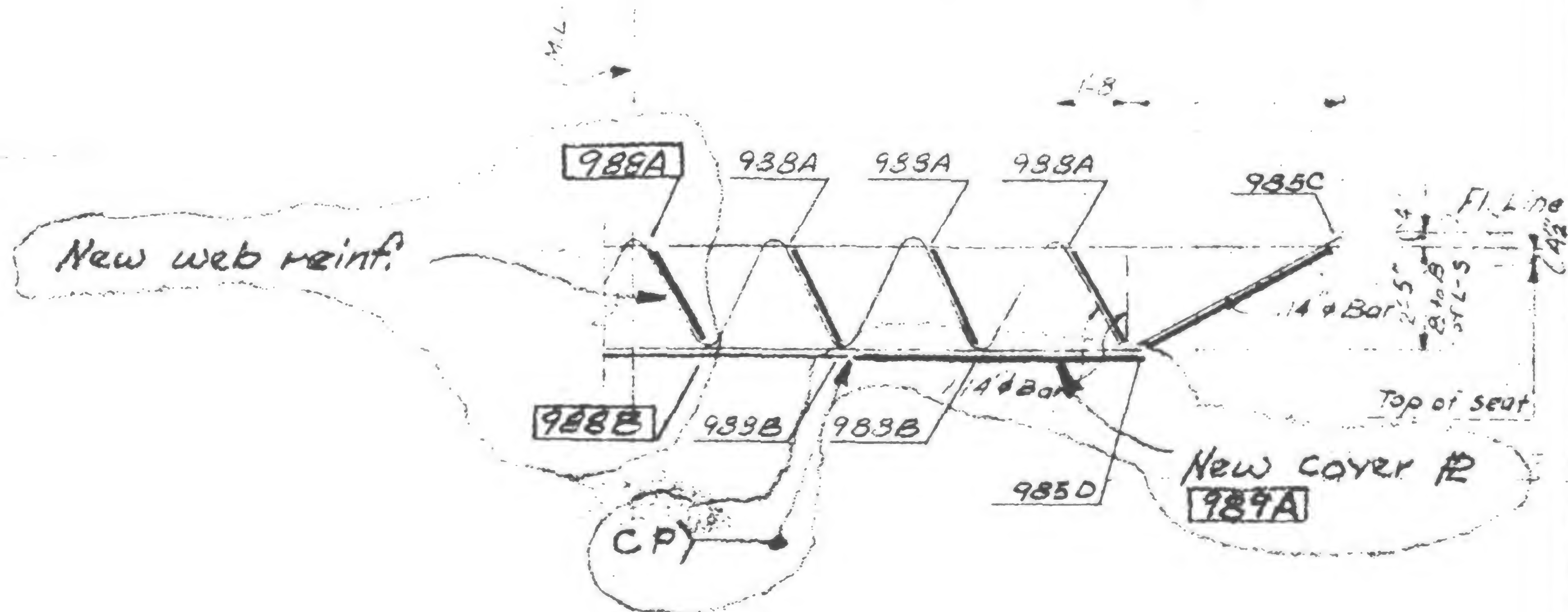
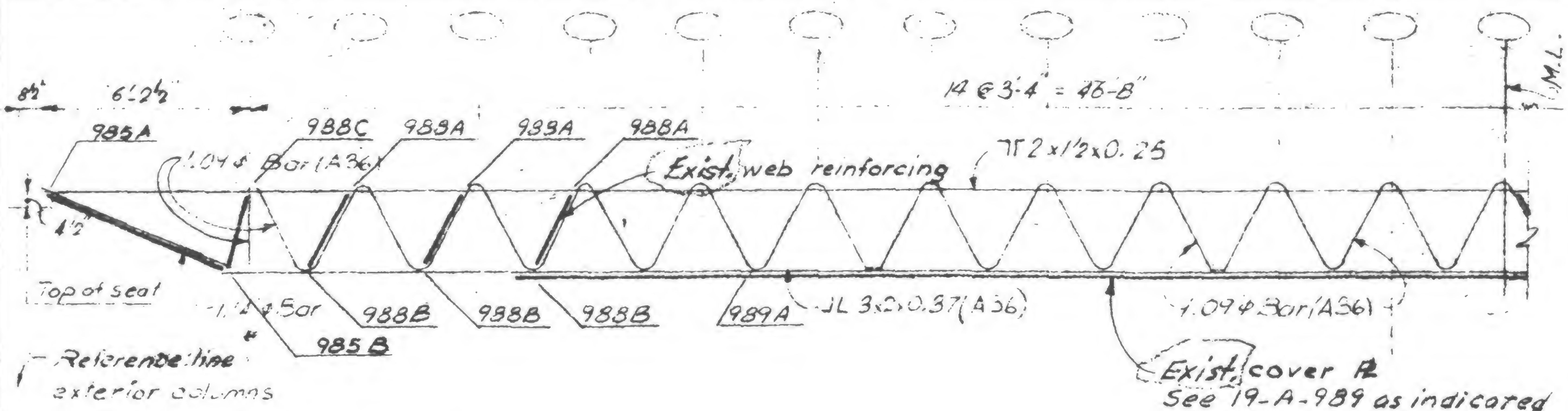
1/27/71

7/30/71

Printed

10/6/71

5/9/79



**RIGHT**

1944

19-00000-24



SKILLING HELLE CHRISTIANSEN ROBERTSON

Structural & Civil Engineers

WORLD TRADE CENTER FLOOR TRUSS C323 - F1.106

DATE 1-7-71

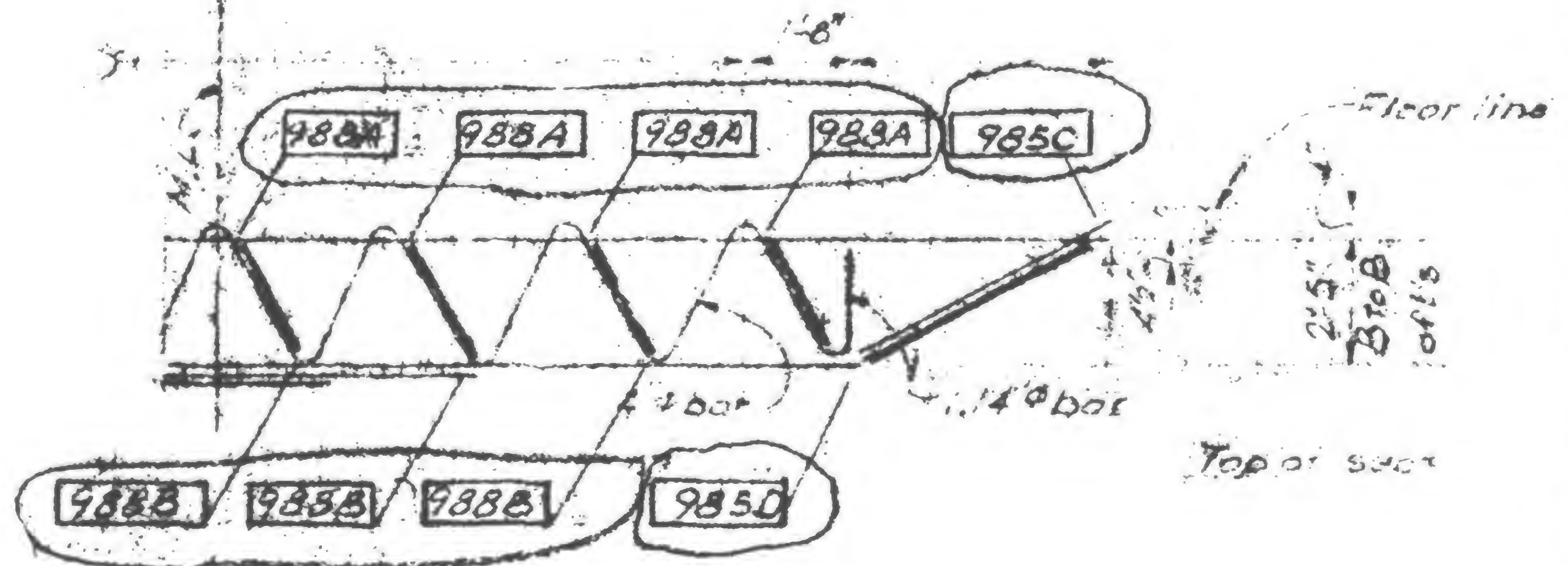
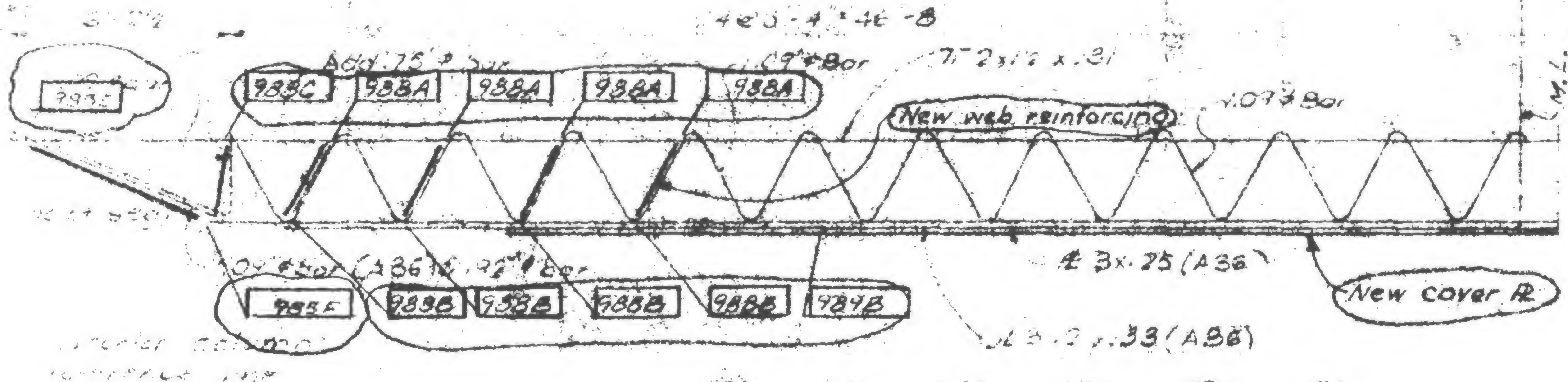
REVISIONS

1/27/71

7/30/71

10/6/71

5/9/79



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9-A-983.3



## Structural & Civil Engineers

TITLE FLOOR TRUSS C32TB - F1.106

DATE 1-7-71

## REVISIONS

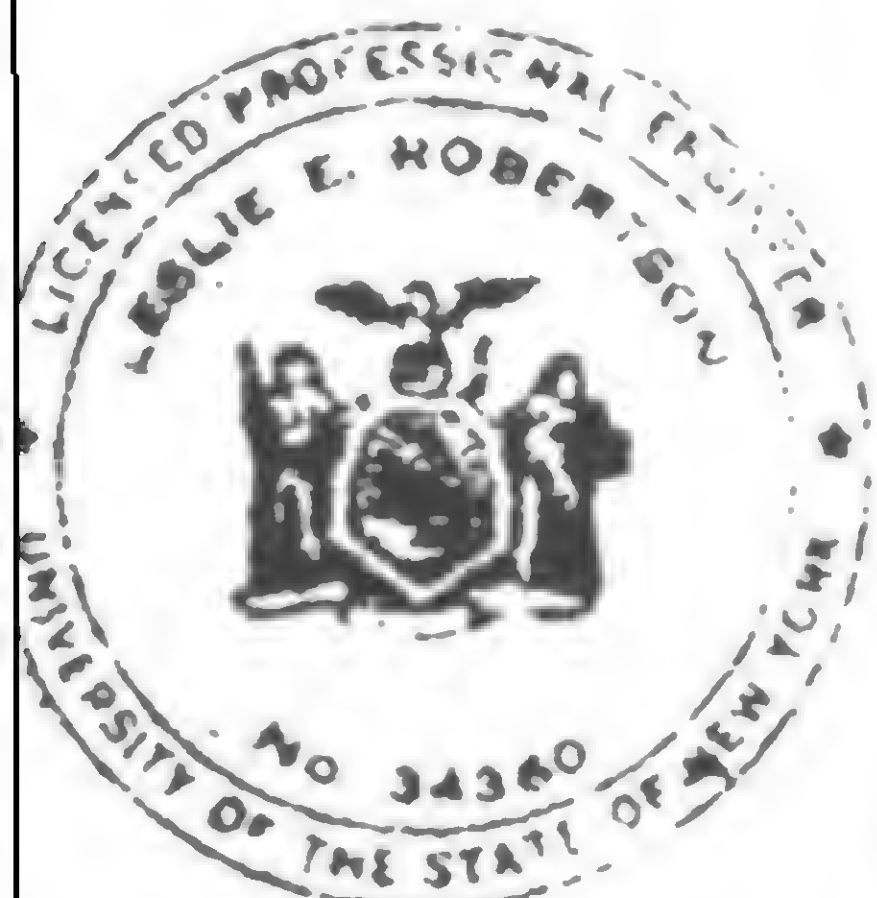
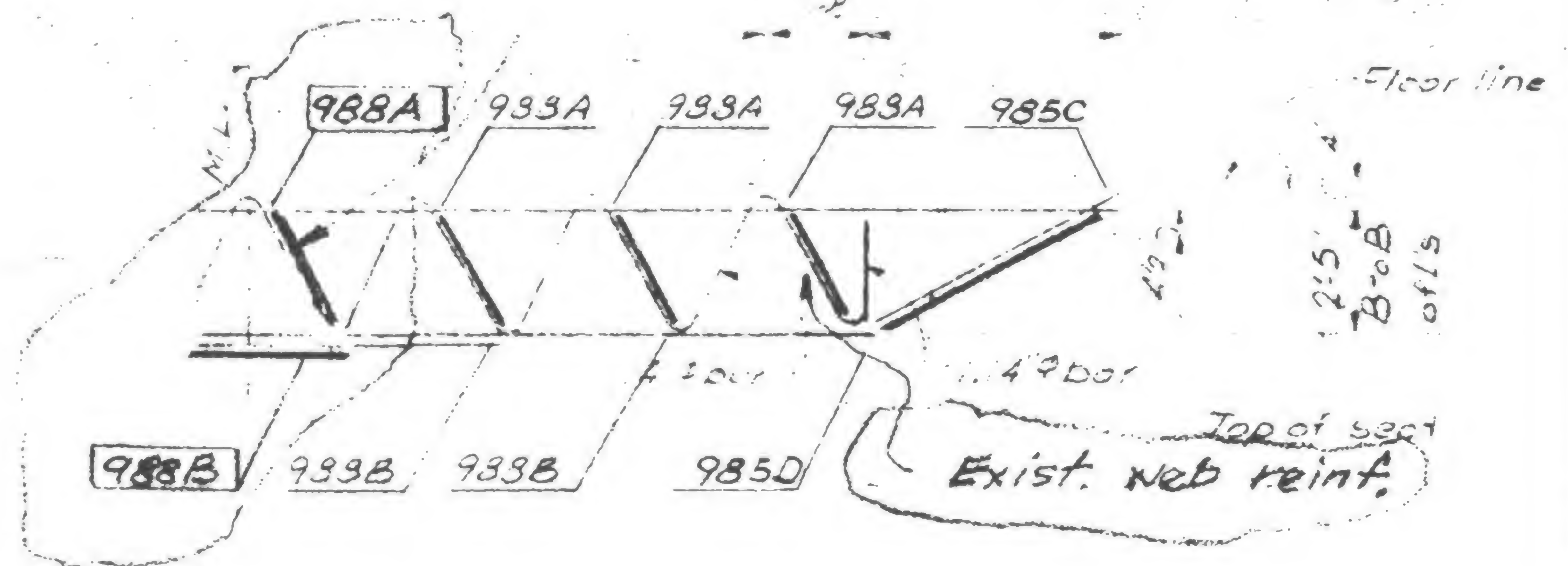
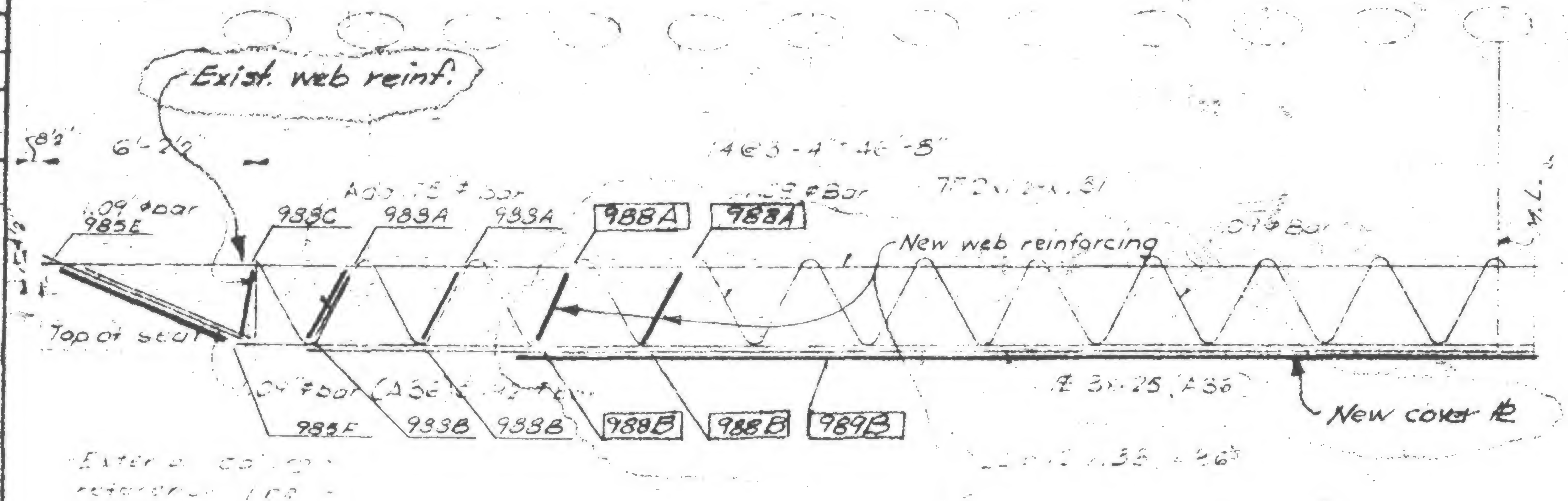
1/27/71

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Printed

10/6/71

5/9/79



GNED

04 2 2 7

REVISED

W. B. Brown

19-A-983.3A



## Structural & Civil Engineers

TITLE FLOOR TRUSS CSPTT-F1.106

DATE 1-7-71

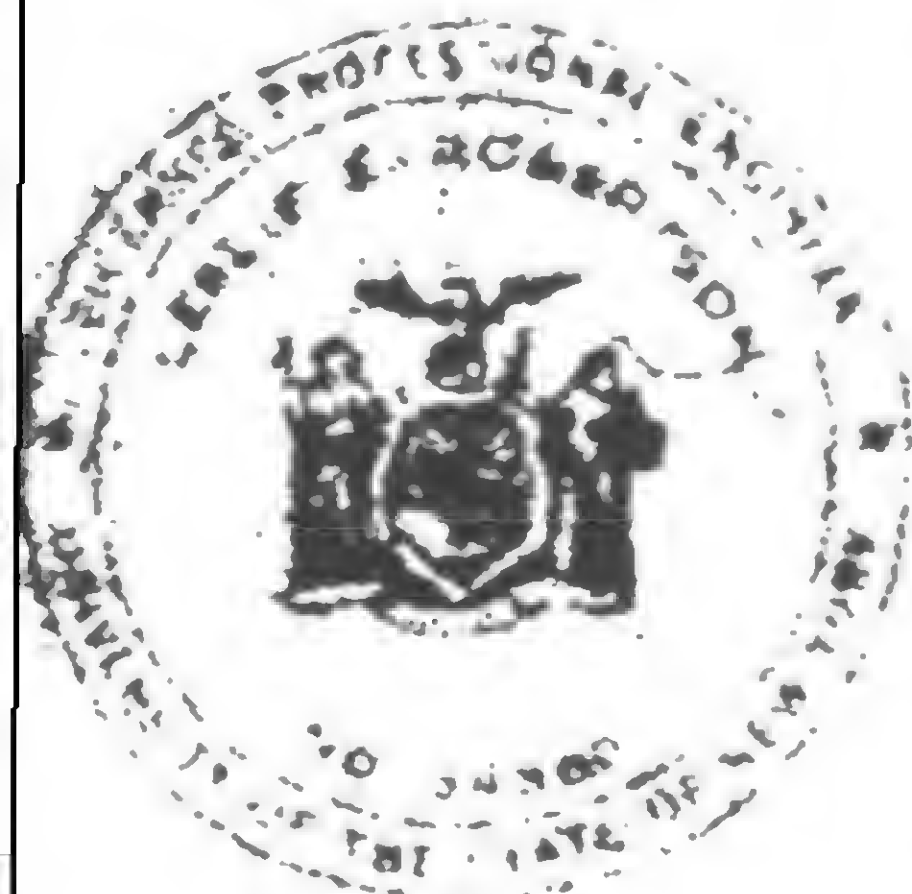
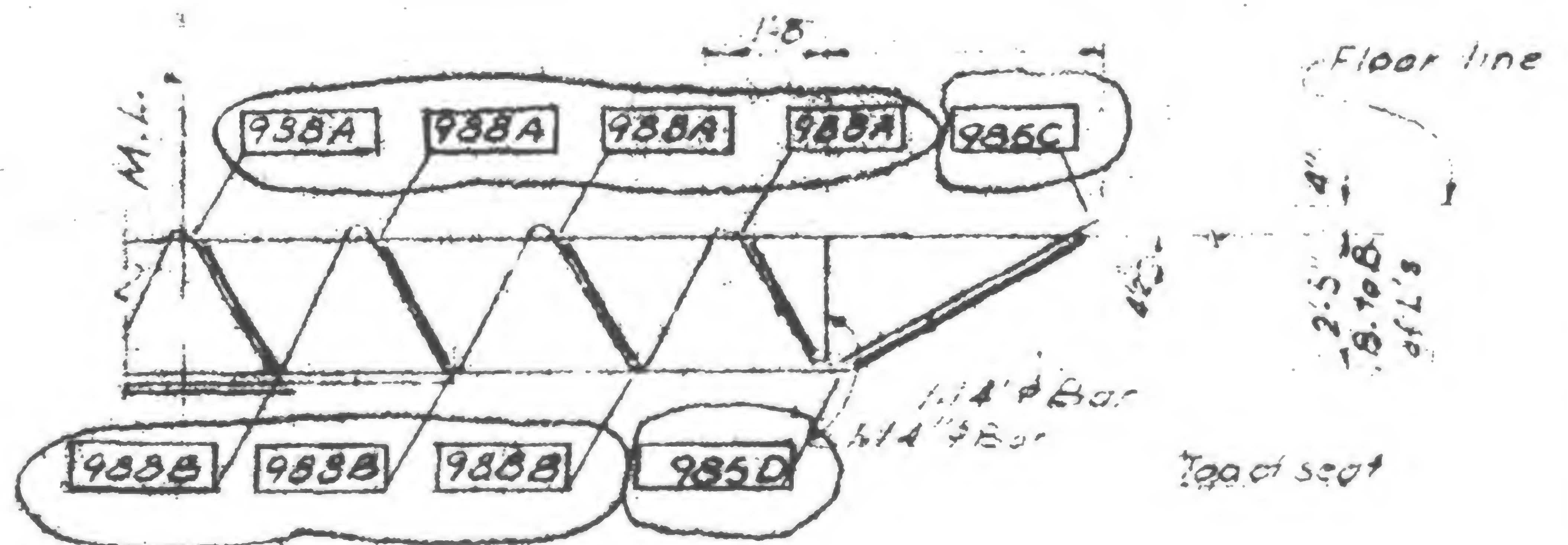
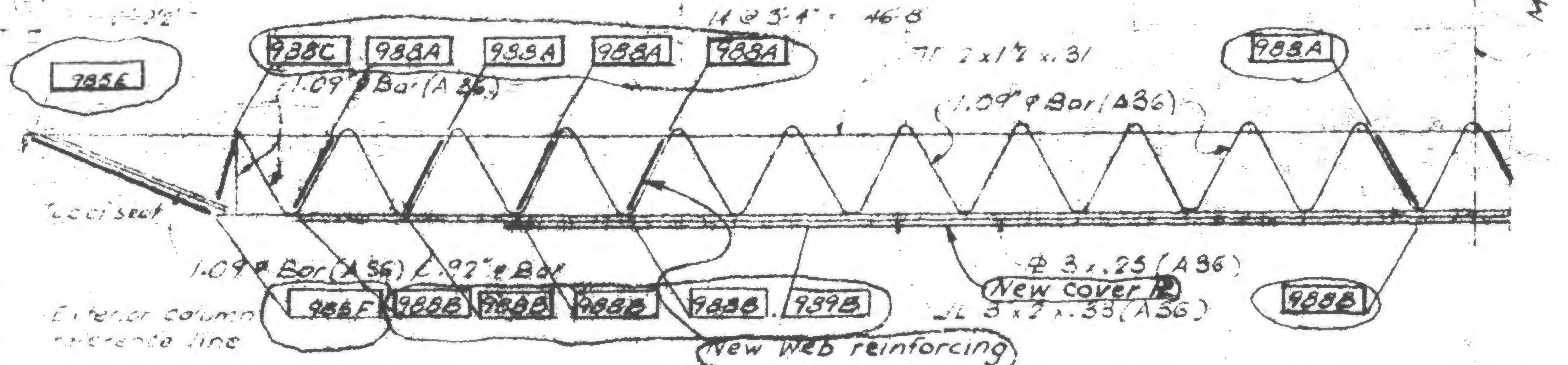
## RELIGIONS

1/27/71

7/30/71

10/6/71

5/9/79



51045

55. 55

Wat

19-A-983.4



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

WTC 444.0

PROJECT THE WORLD TRADE CENTER

TITLE FLOOR TRUSS C32T7-F1.106

DATE 1-7-71

REVISIONS

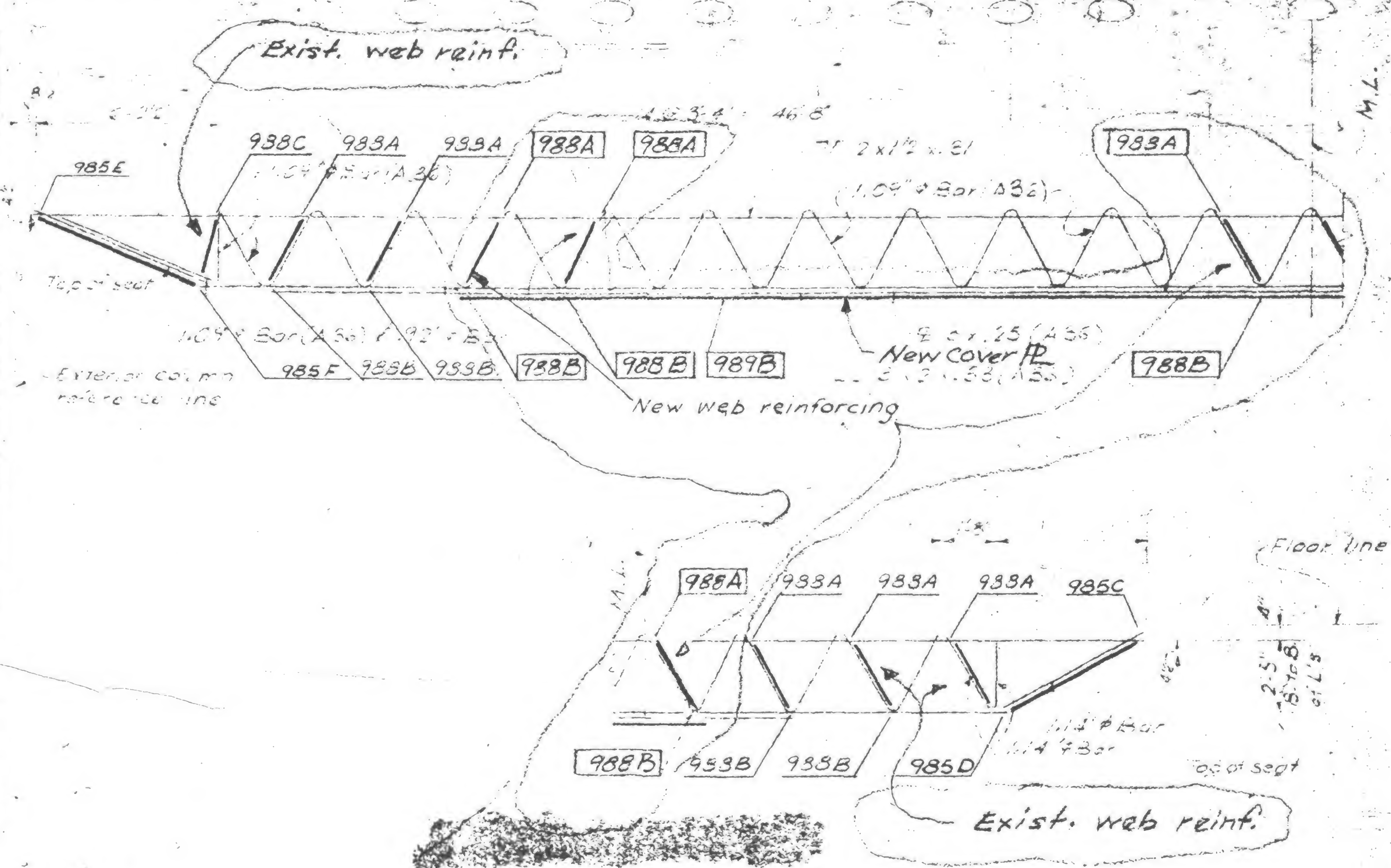
1/27/71

7/30/71

Printed

10/6/71

5/9/79



JNEC

DRAWN

REVIEWED

W. Brewer

19-A-53.4A



727/71

7130/71

10/6/71

5/9/79



983.5

19-A-22

was



**PROJECT:**

THE WORLD TRADE CENTER

TITLE

FLOOR TRUSS C3273 - FI. 100

DATE \_\_\_\_\_

1-7-71

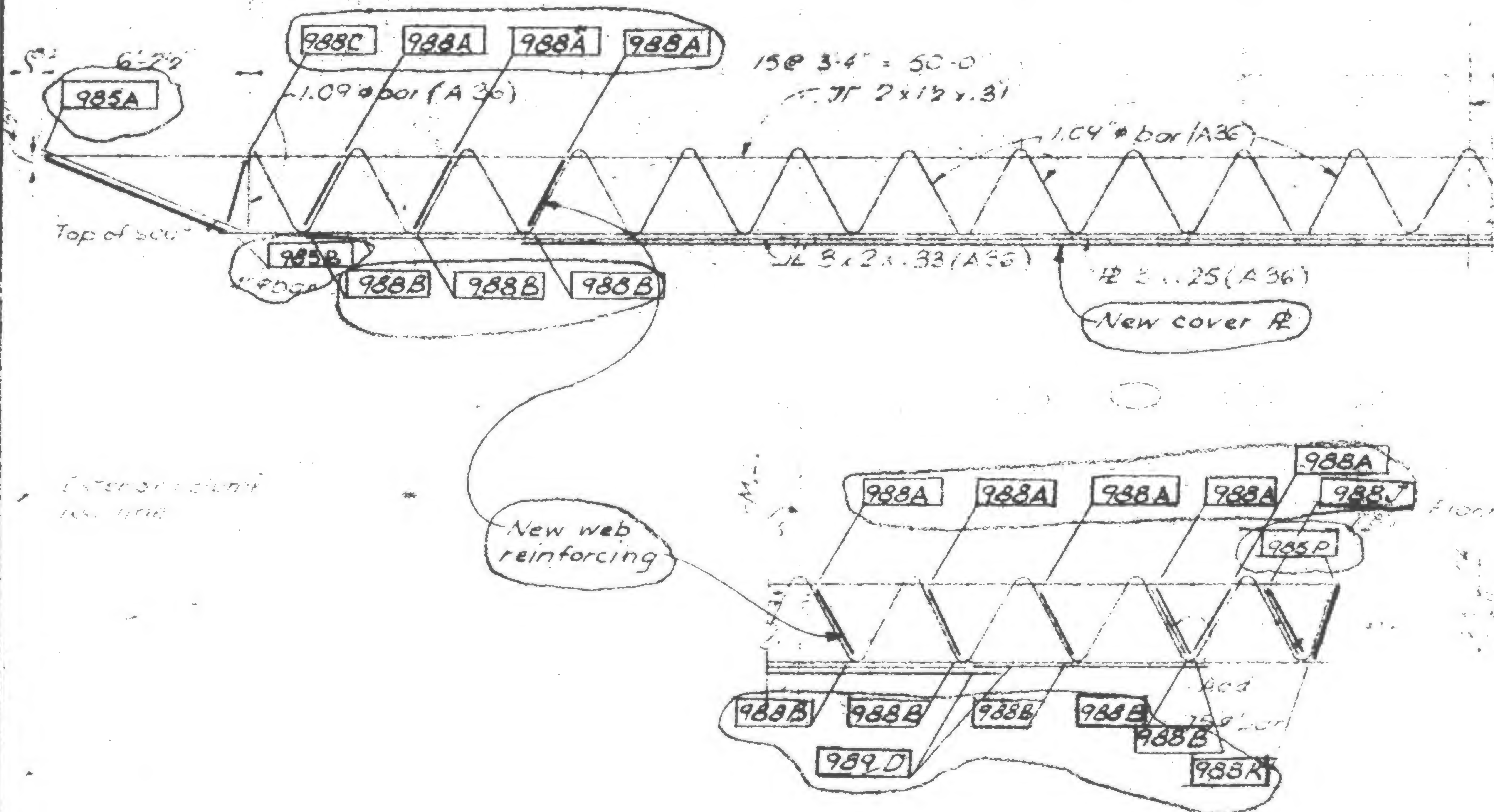
## REVISIONS

7/71

7/30/71

10/6/71

5/9/79



Wat

19-A-983.6



SKILLING HELLE CHRISTIANSEN ROBERTSON

Structural & Civil Engineers

PROJECT

THE WORLD TRADE CENTER

TITLE

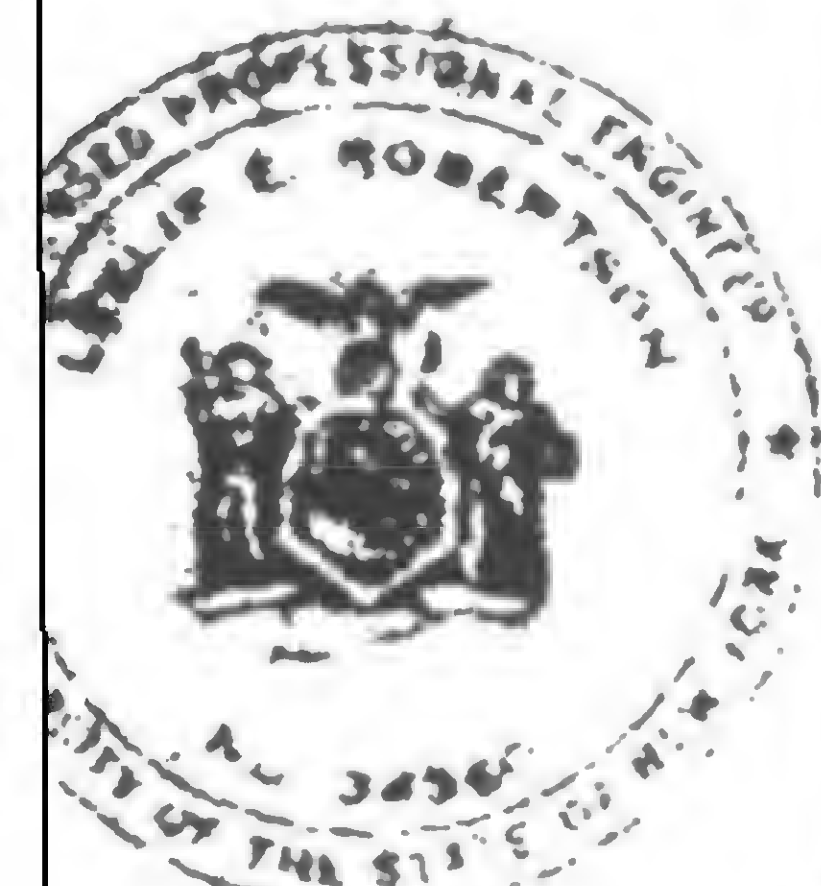
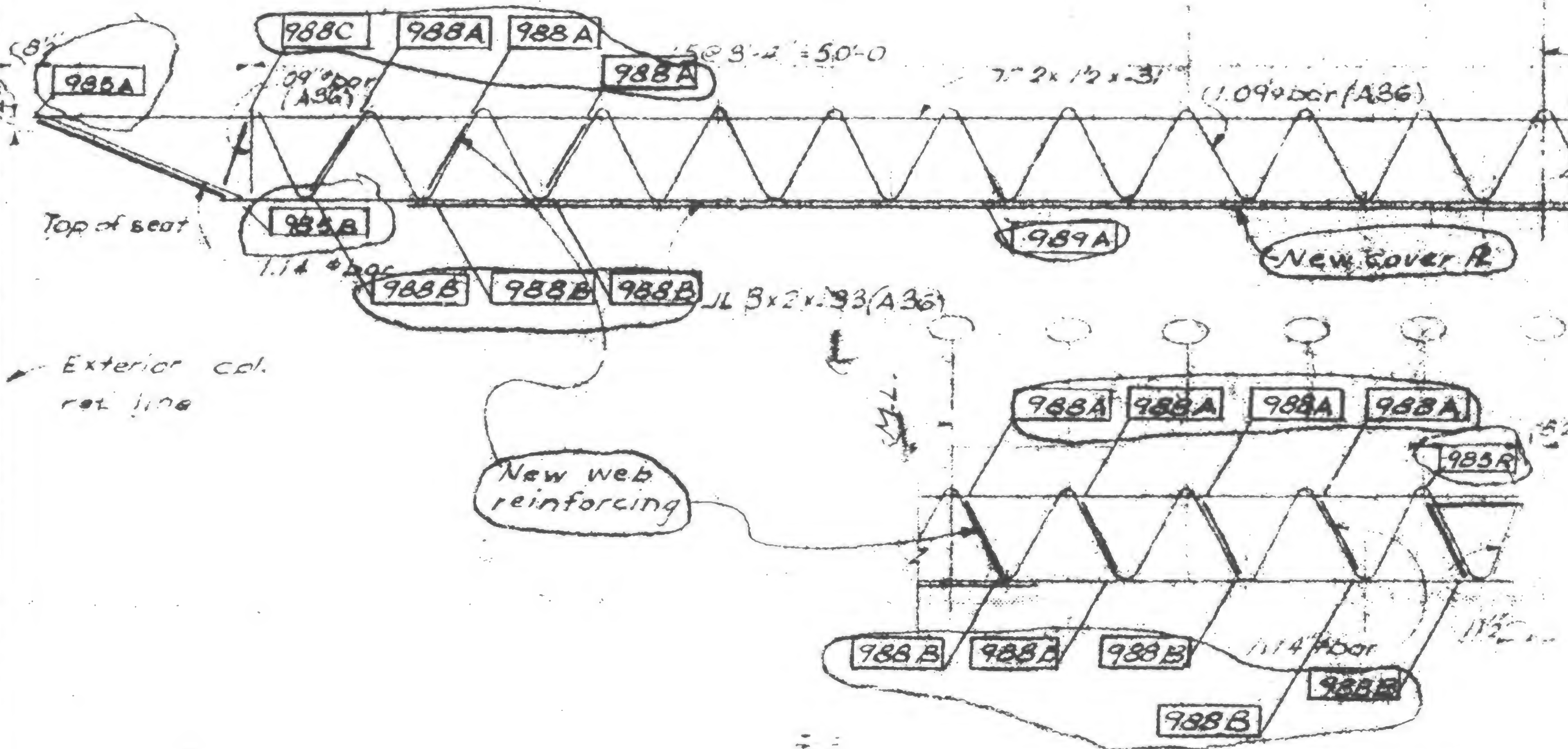
FLOOR TRUSS C 32 T 9 - FI. 106

DATE

1-7-71

REVISIONS

7-7/71  
7/30/71  
10/6/71  
5/9/79



WAB

19-A-983.7



SKILLING, HELLE CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

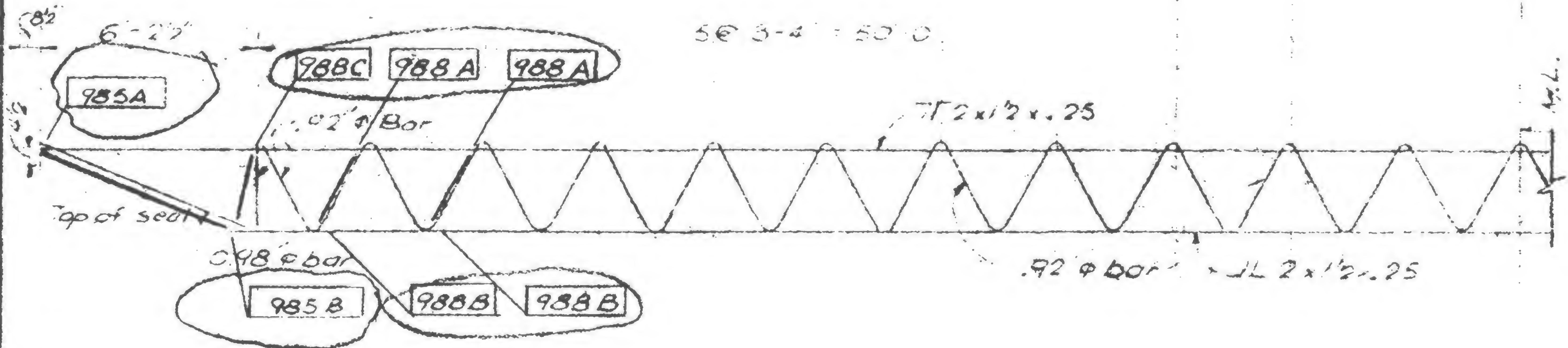
PROJECT THE WORLD TRADE CENTER

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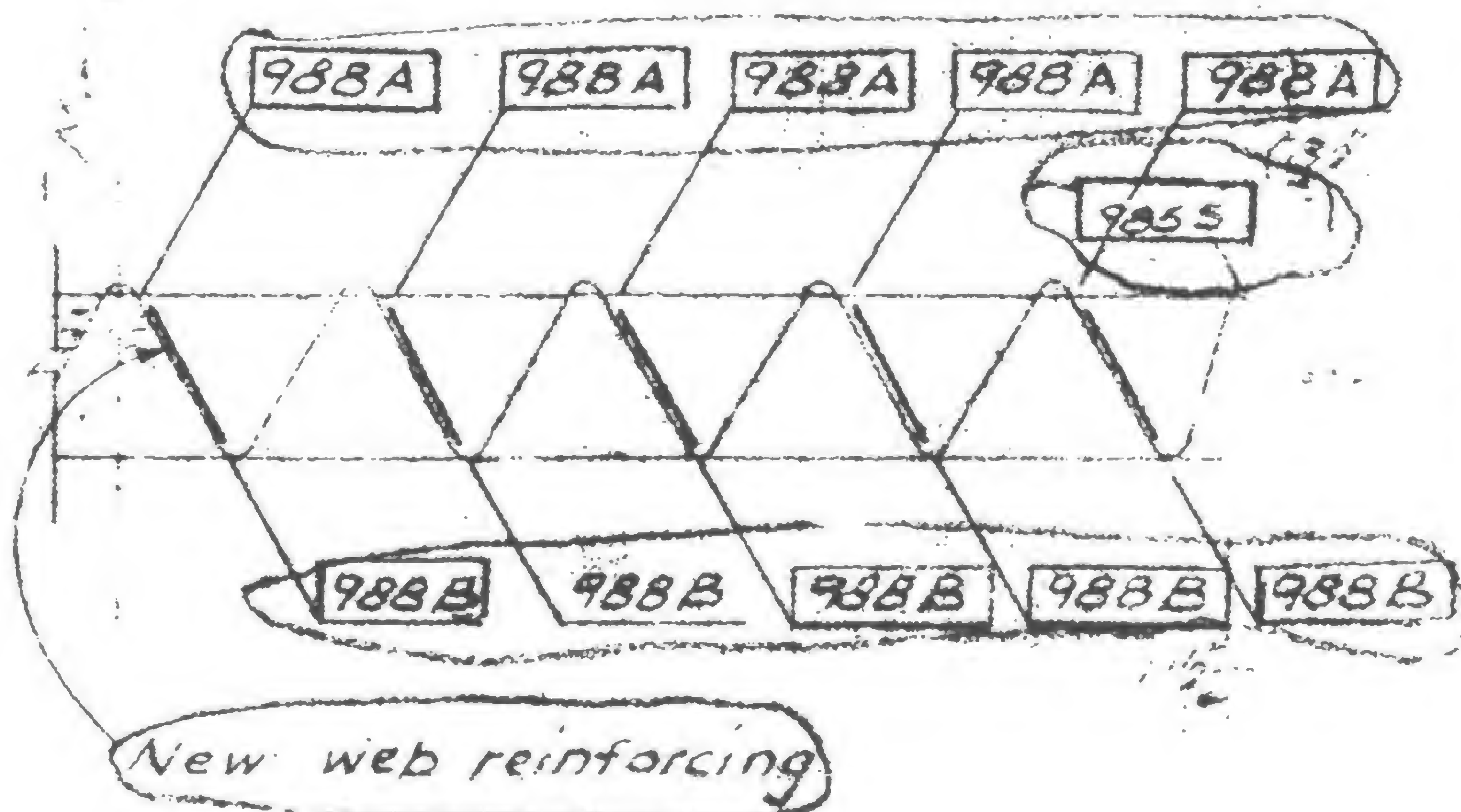
DATE 1-7-71

REVISIONS

7/27/71  
7/30/71  
10/6/71  
5/9/79



Exterior columns  
not shown



19-A-983.8



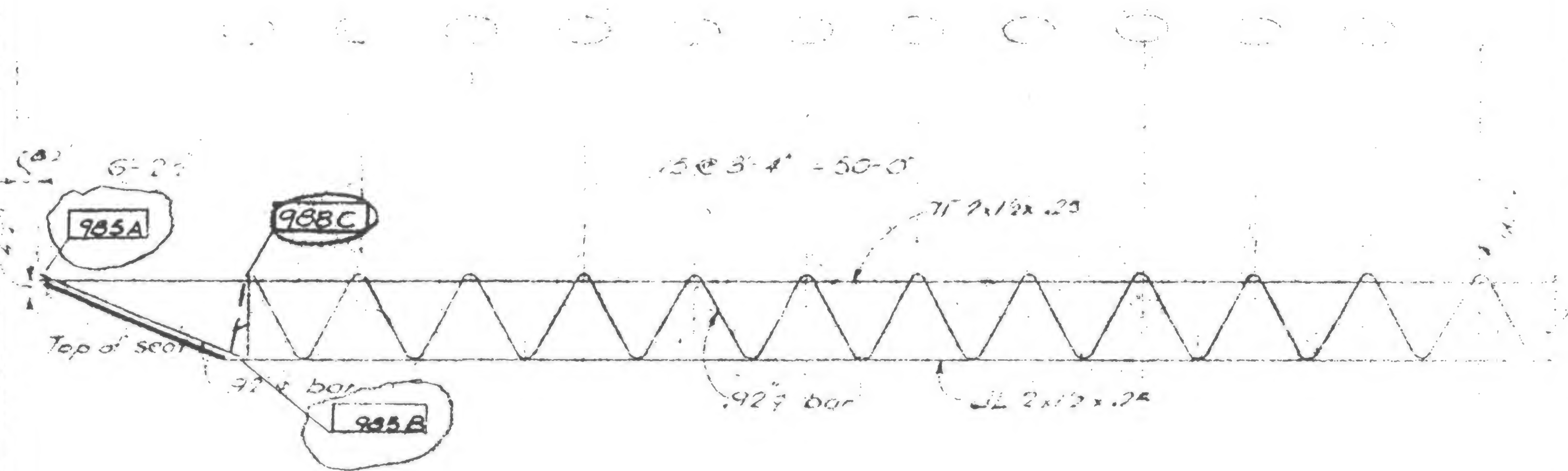
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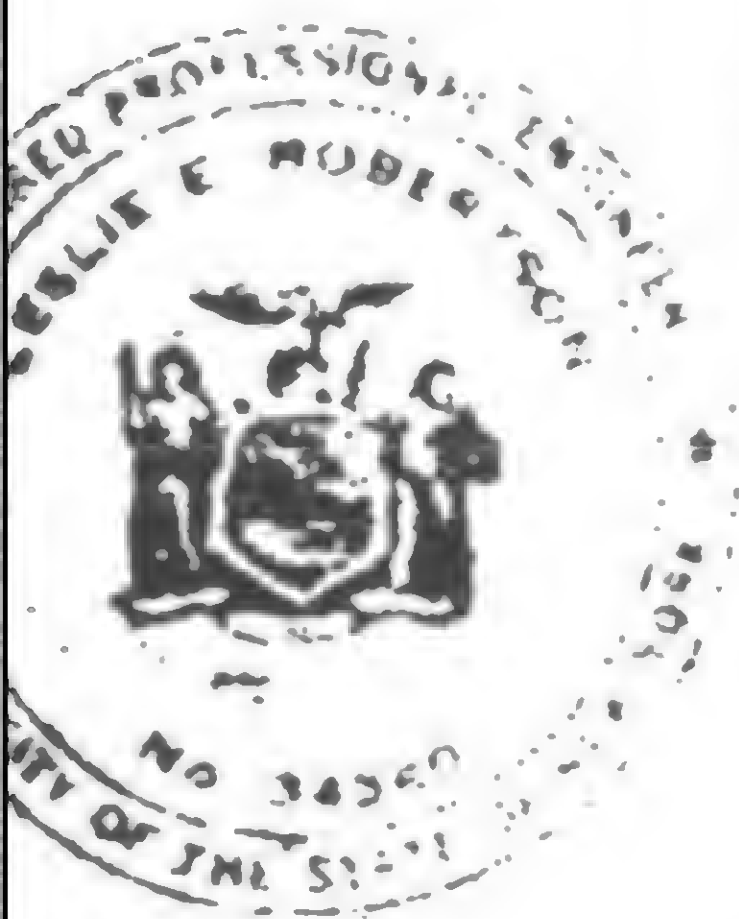
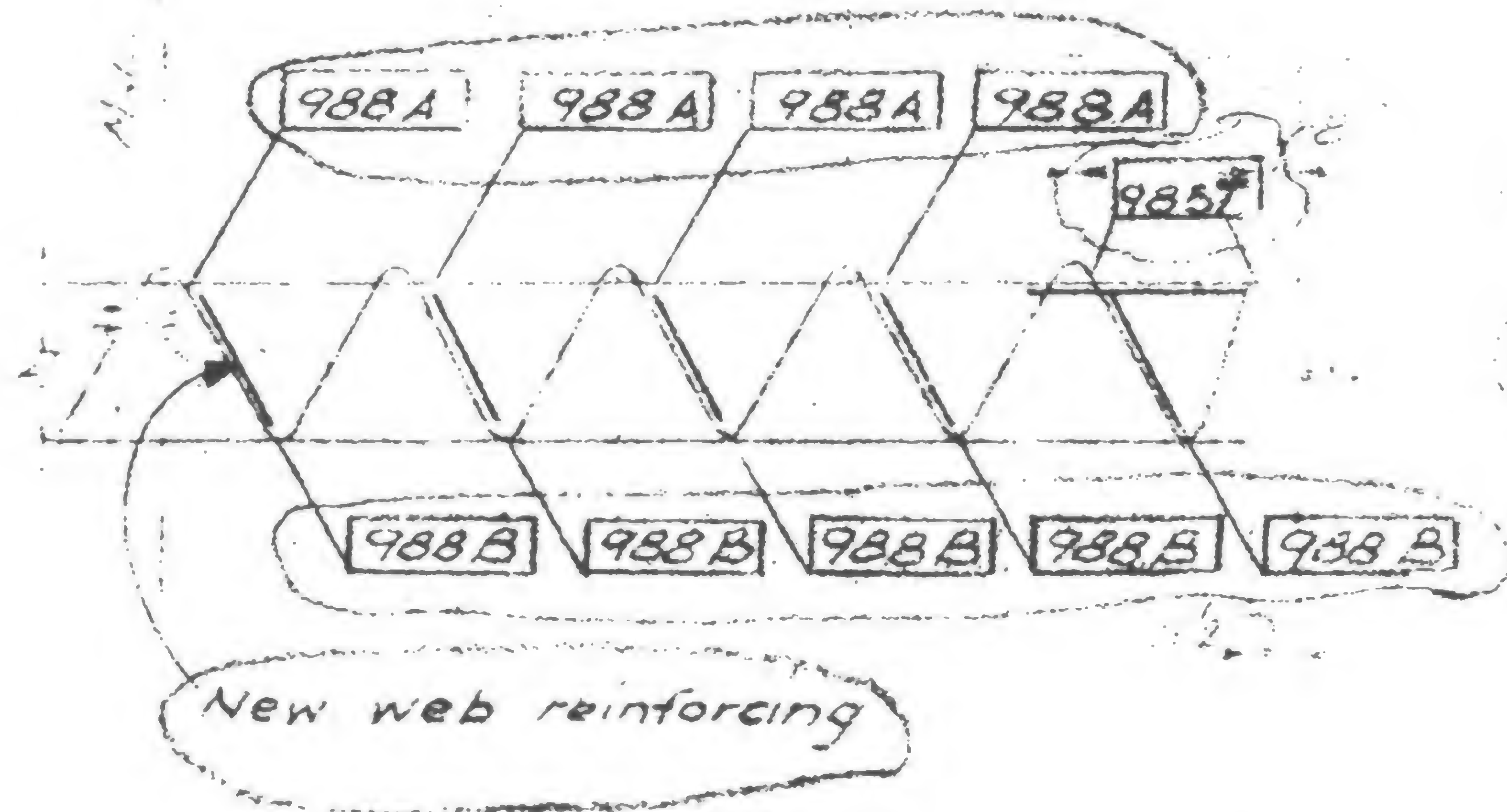
DATE 1-7-71

REVISIONS

- 7/71
- 7/30/71
- 10/6/71
- 5/9/79



Inter of column  
ref. line



WAB

19-A-983.9



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Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE FLOOR TRUSS C3214-FI-106

DATE 1-7-71

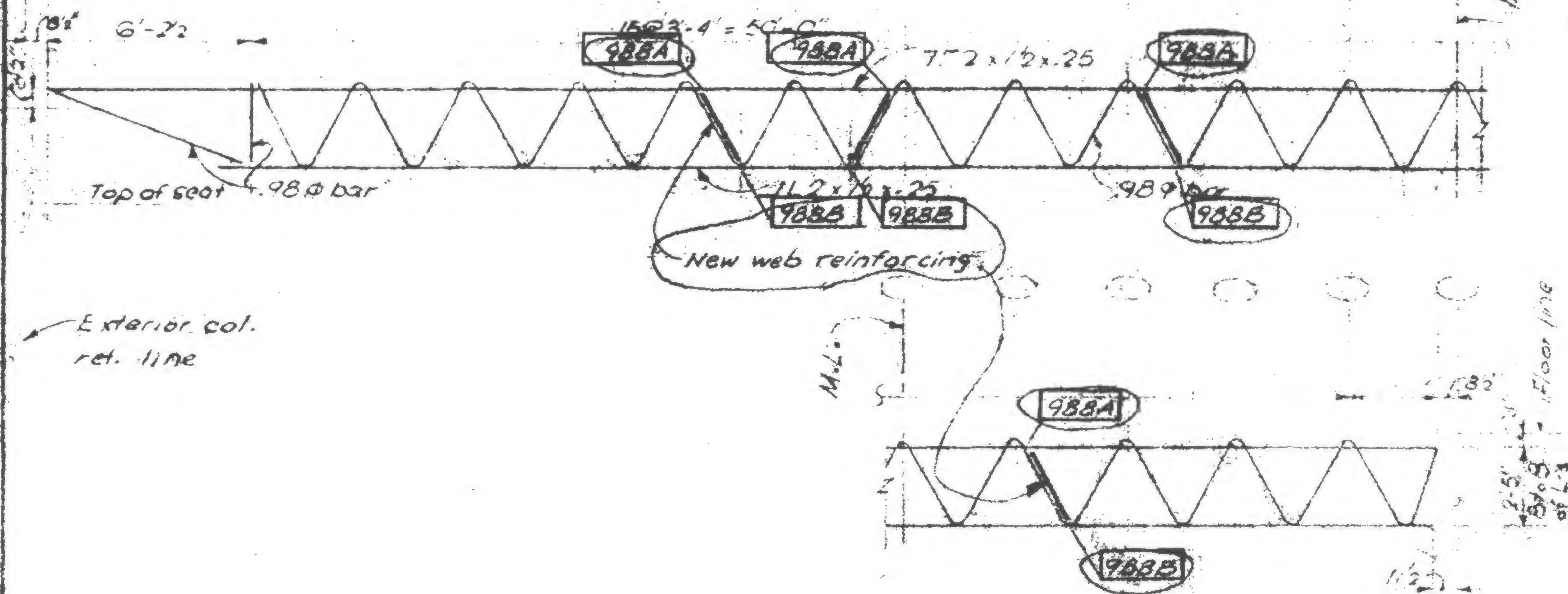
REVISIONS

1-27-71

7/30/71

10/6/71

5/9/79



19-A-983.10



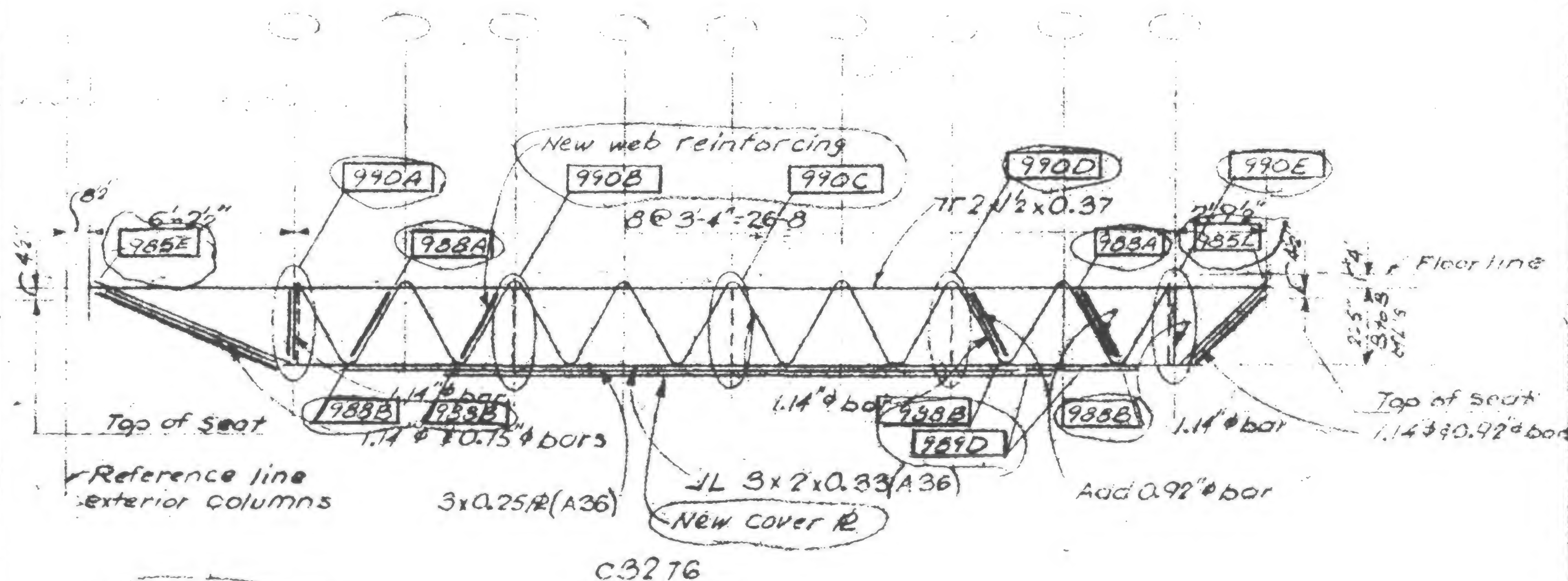
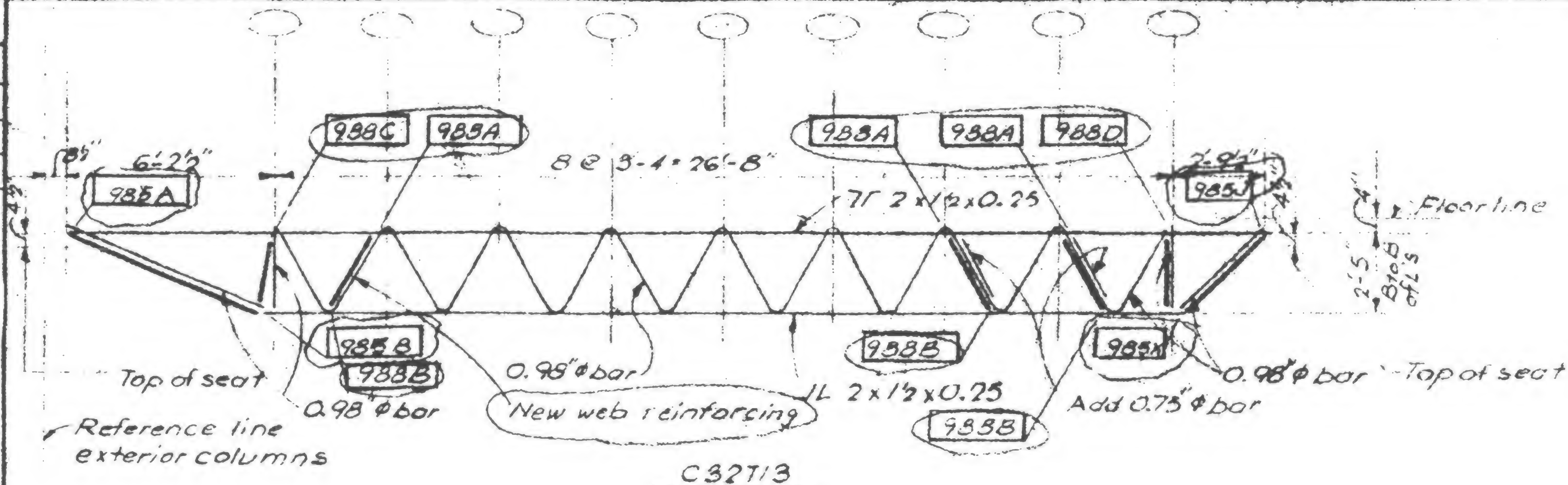
## REVIEWS

1-27-71

7/30/71

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5/9/79



WAB

19-A-983.11



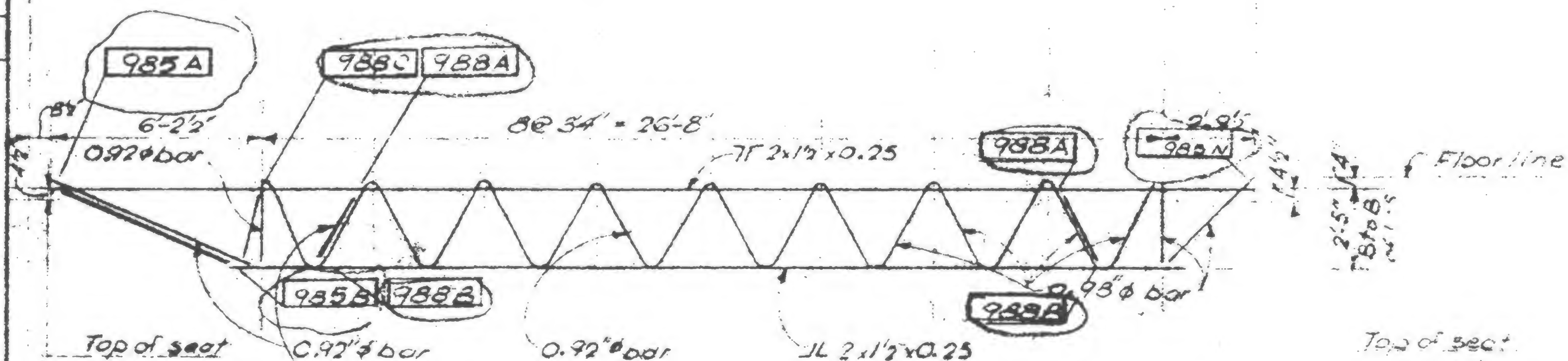
## REVISIONS

1127/71

7/30/91

10/6/71

5/9/79



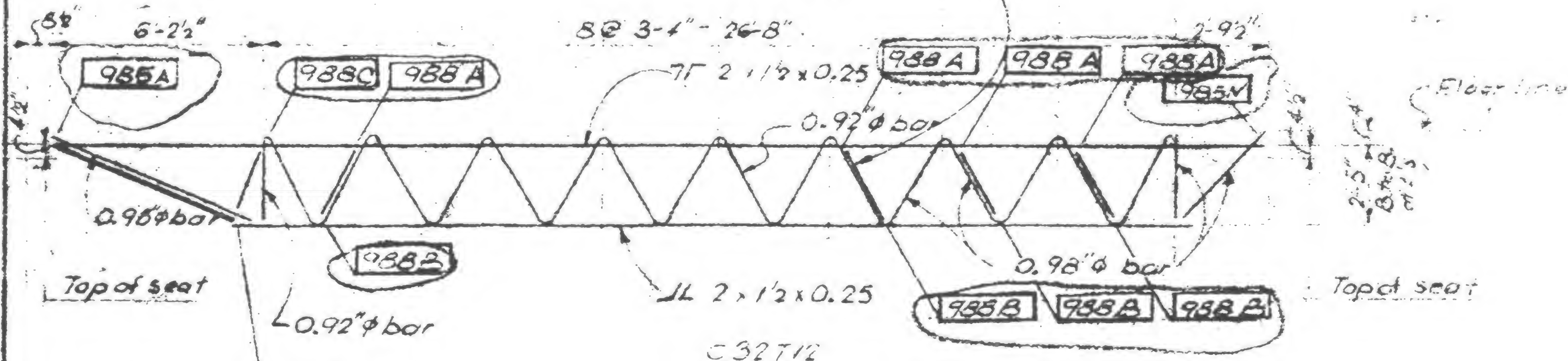
Referene line  
exterior columns

Note:

Plan indication of 983.12  
indicates 3275 except  
where shown otherwise in plan.

C 3275

New web reinforcing



Top of seat

$\angle 0.92'' \phi$  bar

C-32712

Topic sent

9858

19-A-983.12





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

WTC 444.00

PROJECT

THE WORLD TRADE CENTER

TITLE

FLOOR TRUSS - FLOOR 106

DATE

1-7-71

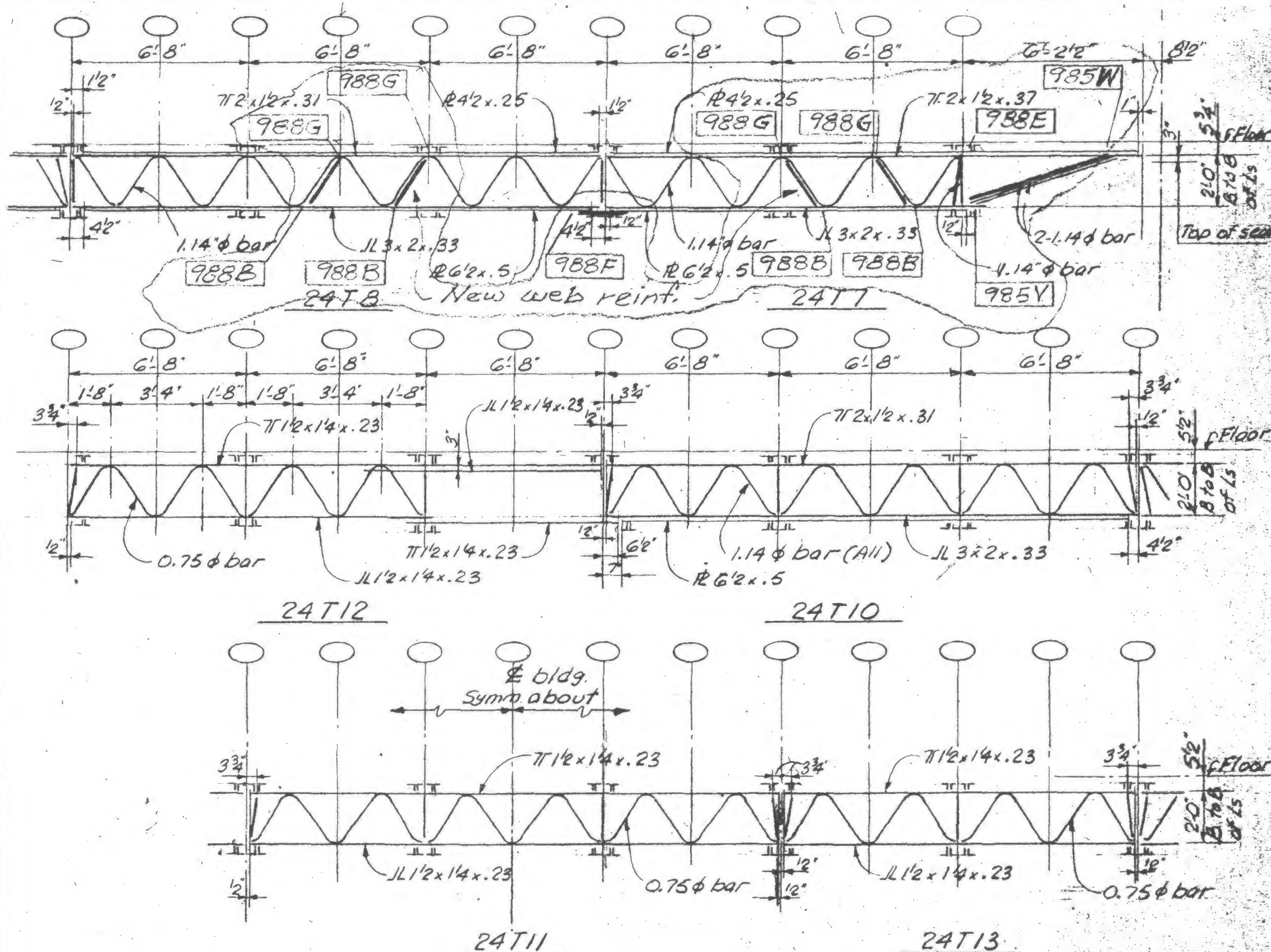
VISIONS

1/27/71

7/30/71

10/6/71

5/9/79

DRAWN  
A. FRANQUI

REVIEWED

10/10/79

19-A-98412



FLOOR TRUSS - FLOOR 106

5/19/79



24773

79-A-5842





SKILLING, HELLER, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

WTC 444.00

PROJECT THE WORLD TRADE CENTER

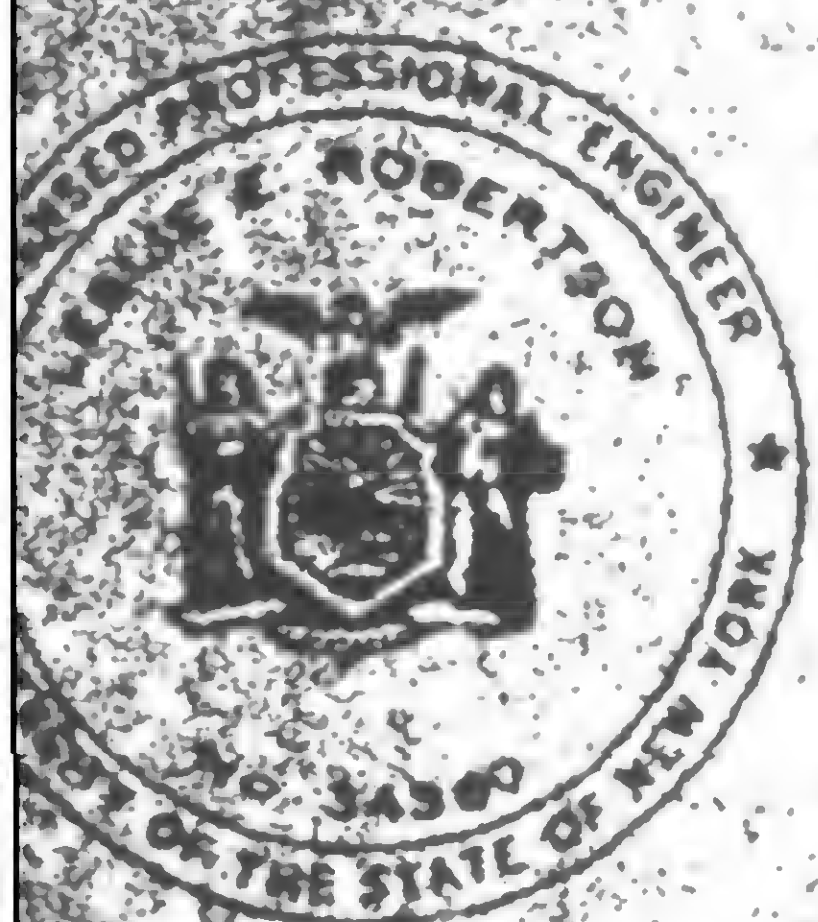
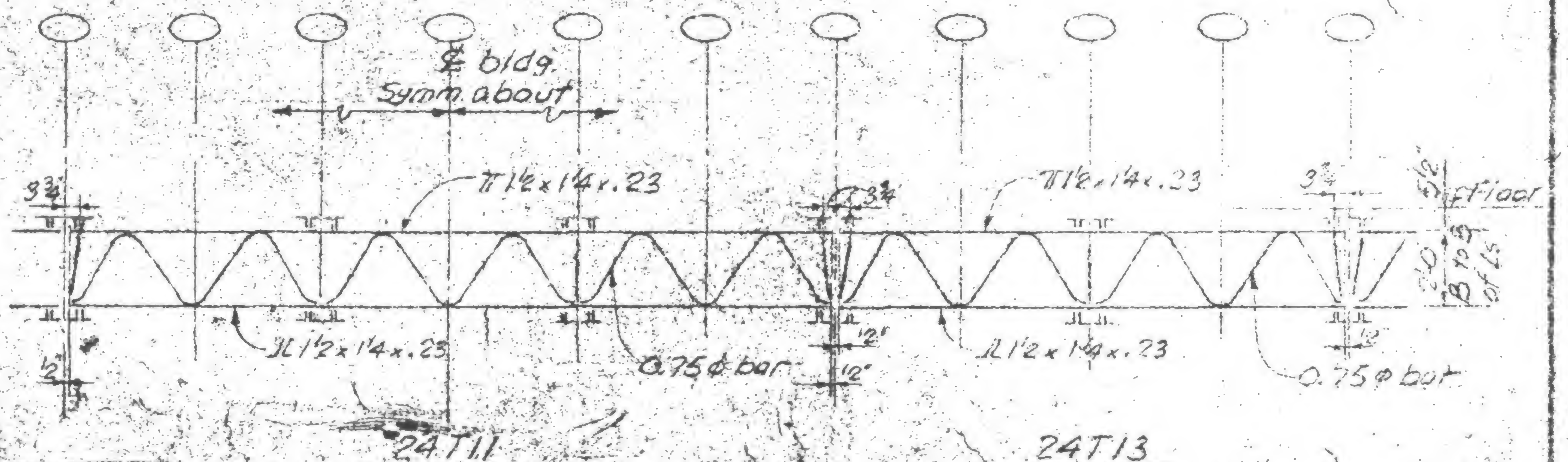
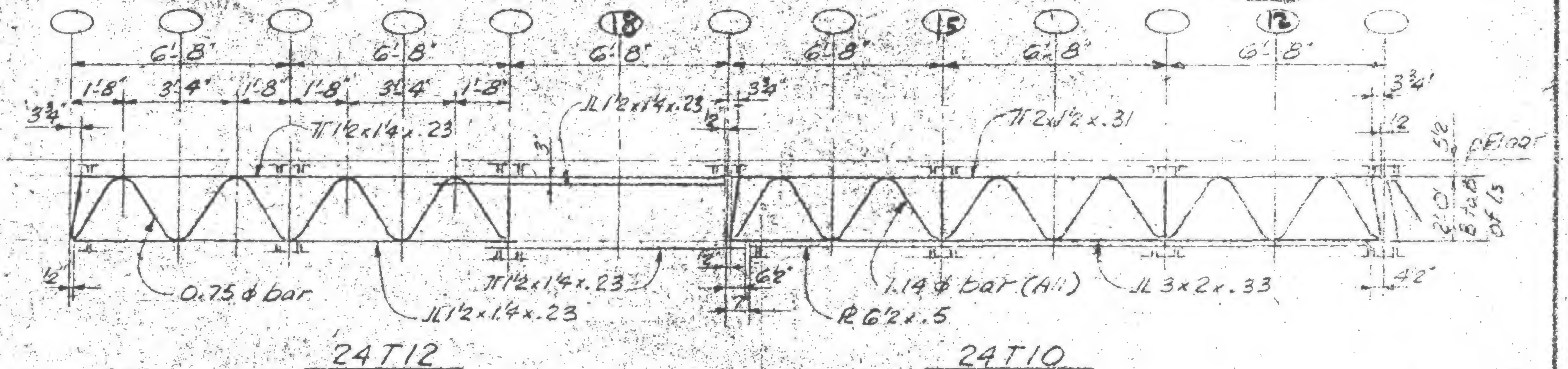
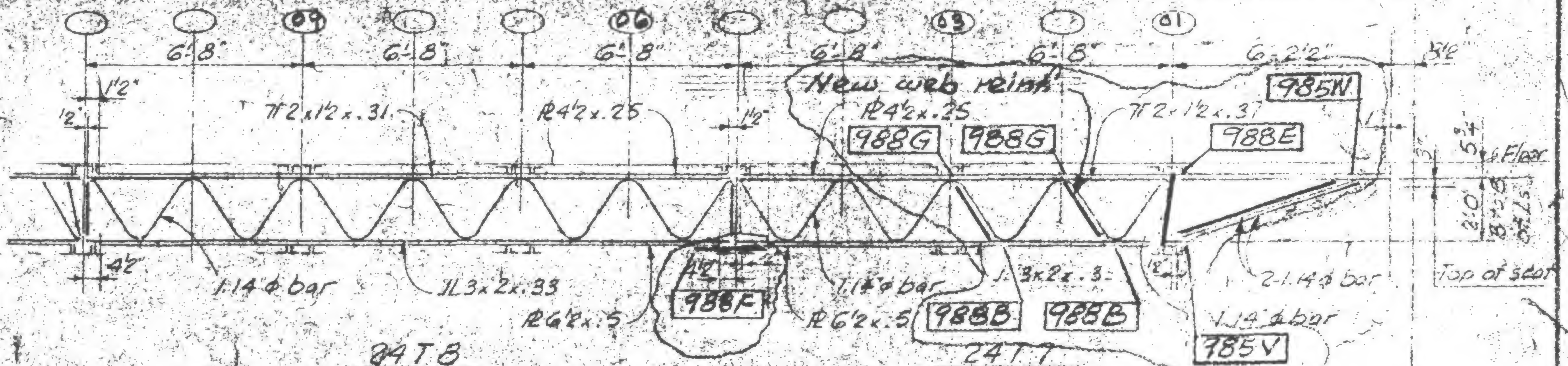
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DATE 1-27-71

7/30/71

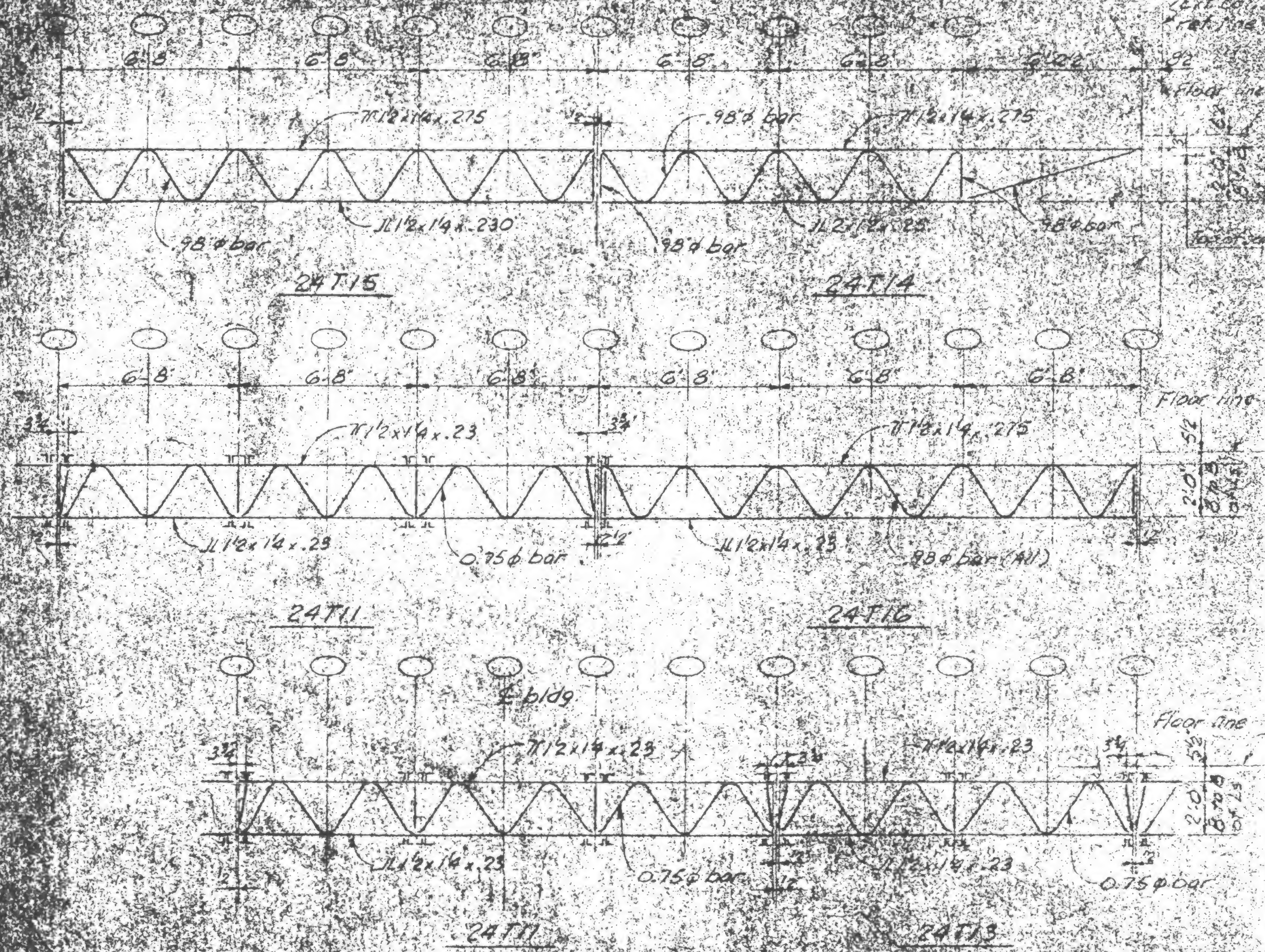
10/6/71

5/9/79



19-A-939.3





Note: No reinforcing required



DATE 1-7-71

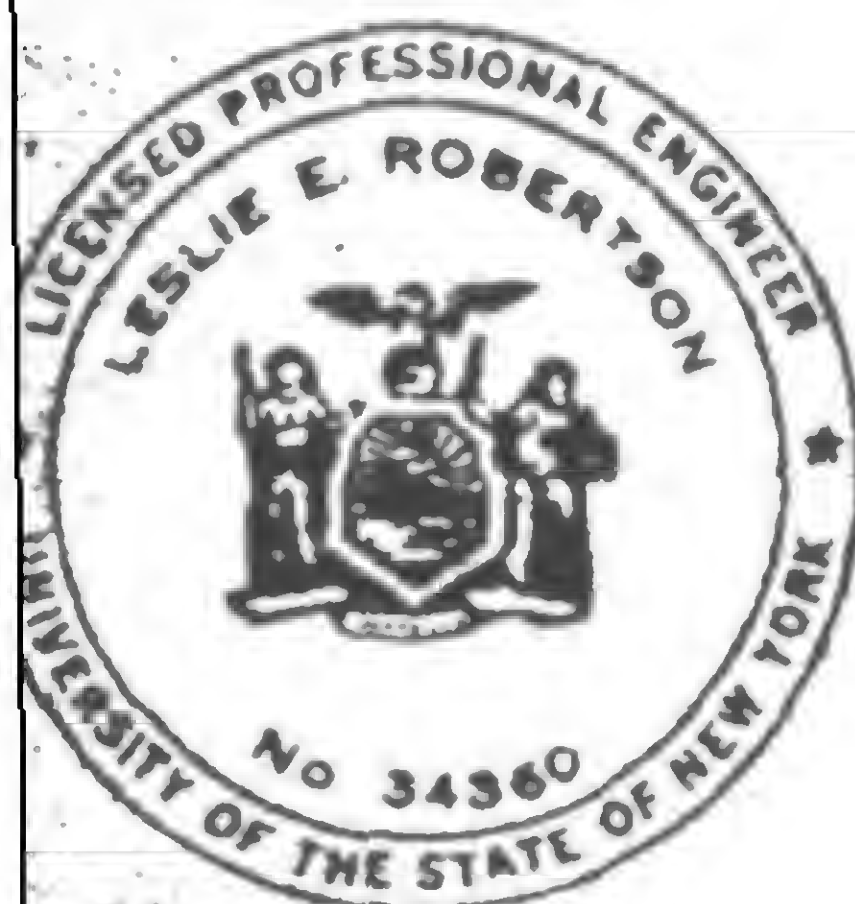
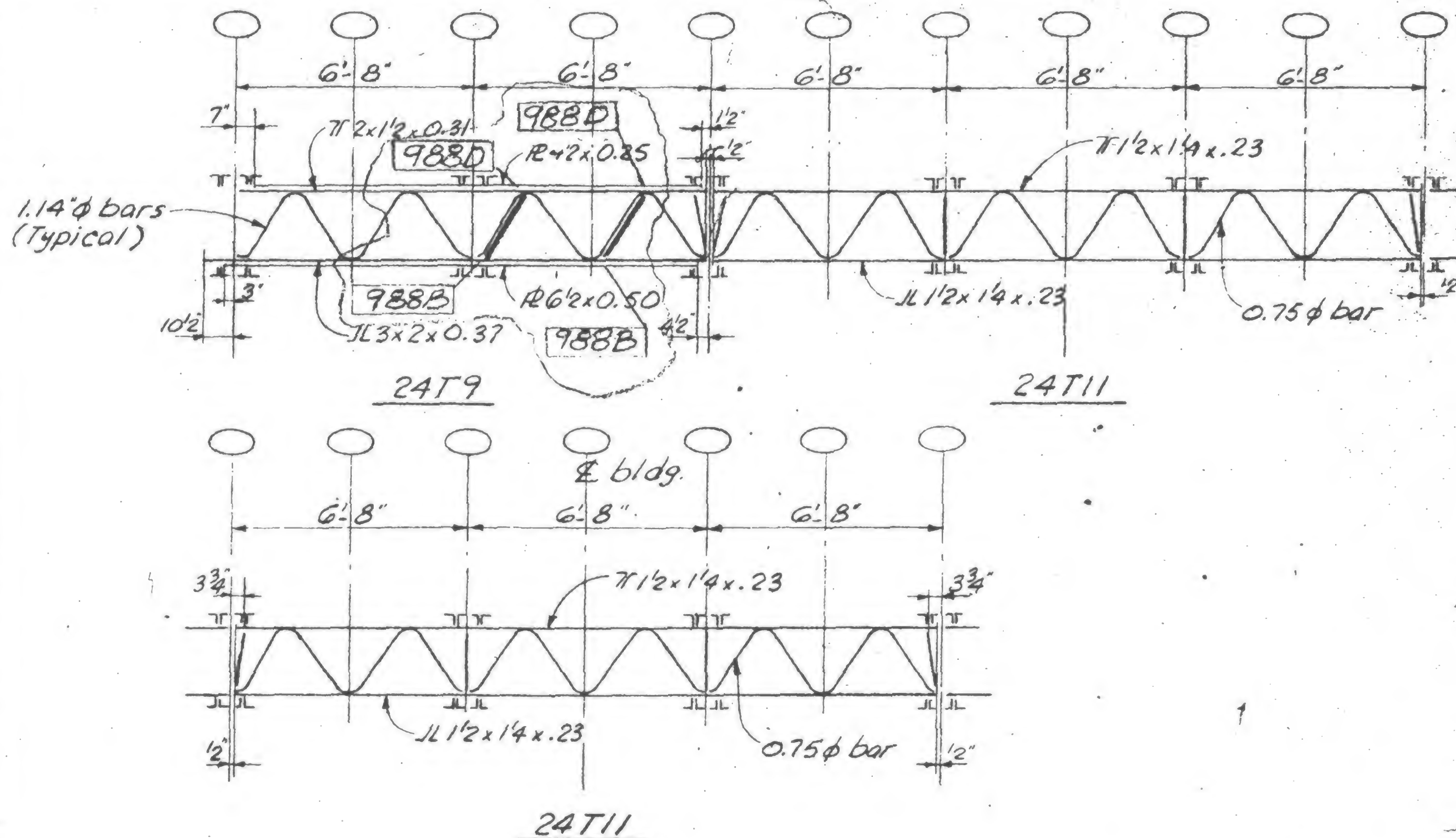
## REVISIONS

1/27/71

7/30/71

10/6/71

5/9/79



**SIGNED**

DRAWN  
A. FRANQUI

REVIEWED  
A. P. [Signature]

19-A-9845



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

WTC 444.00

PROJECT THE WORLD TRADE CENTER

FLOOR TRUSS - FLOOR 106

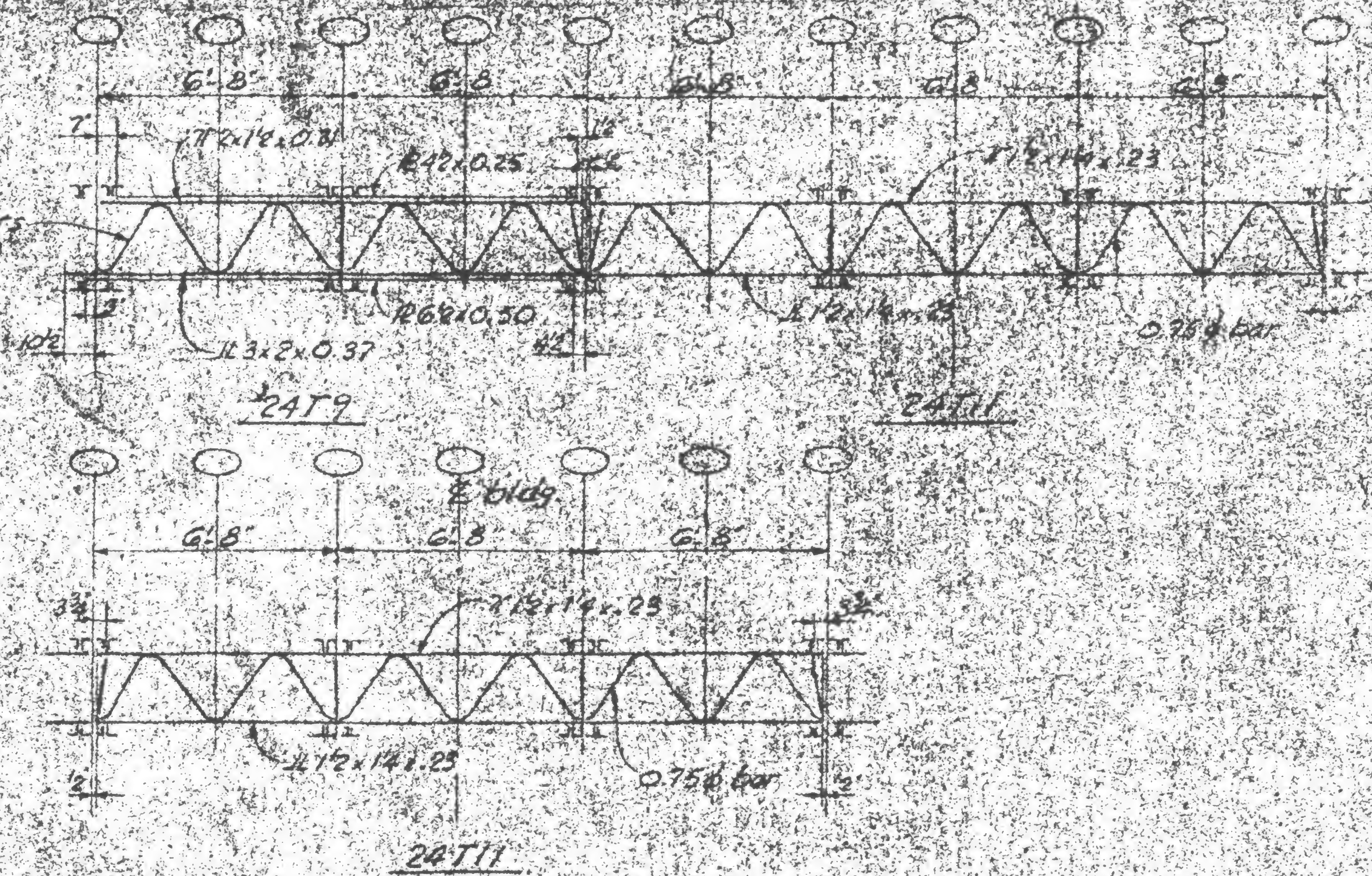
121-71

Printed  
1/30/71

Printed  
10/6/71

Printed  
5/9/79

1/4" bars  
(typical)



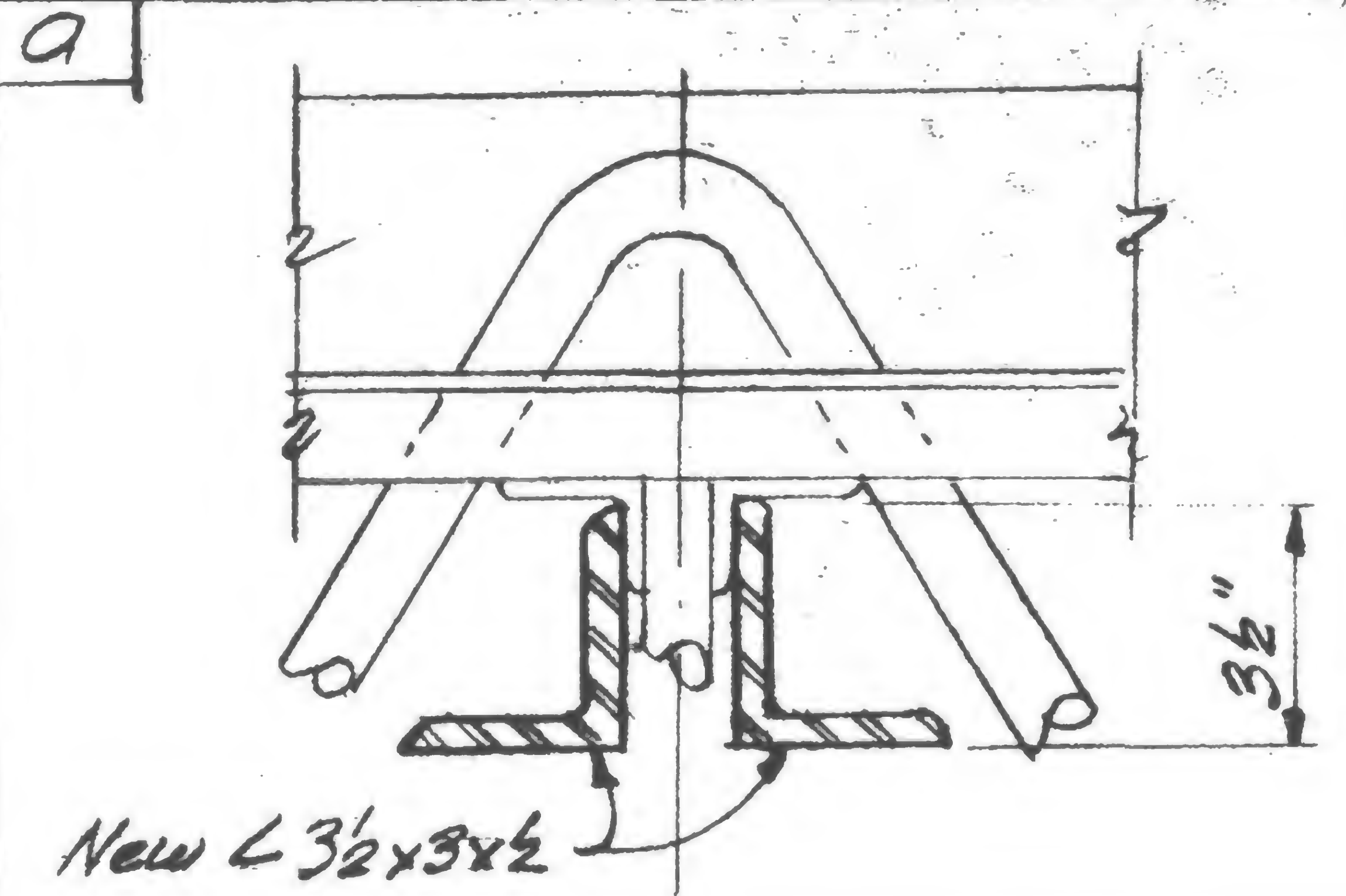
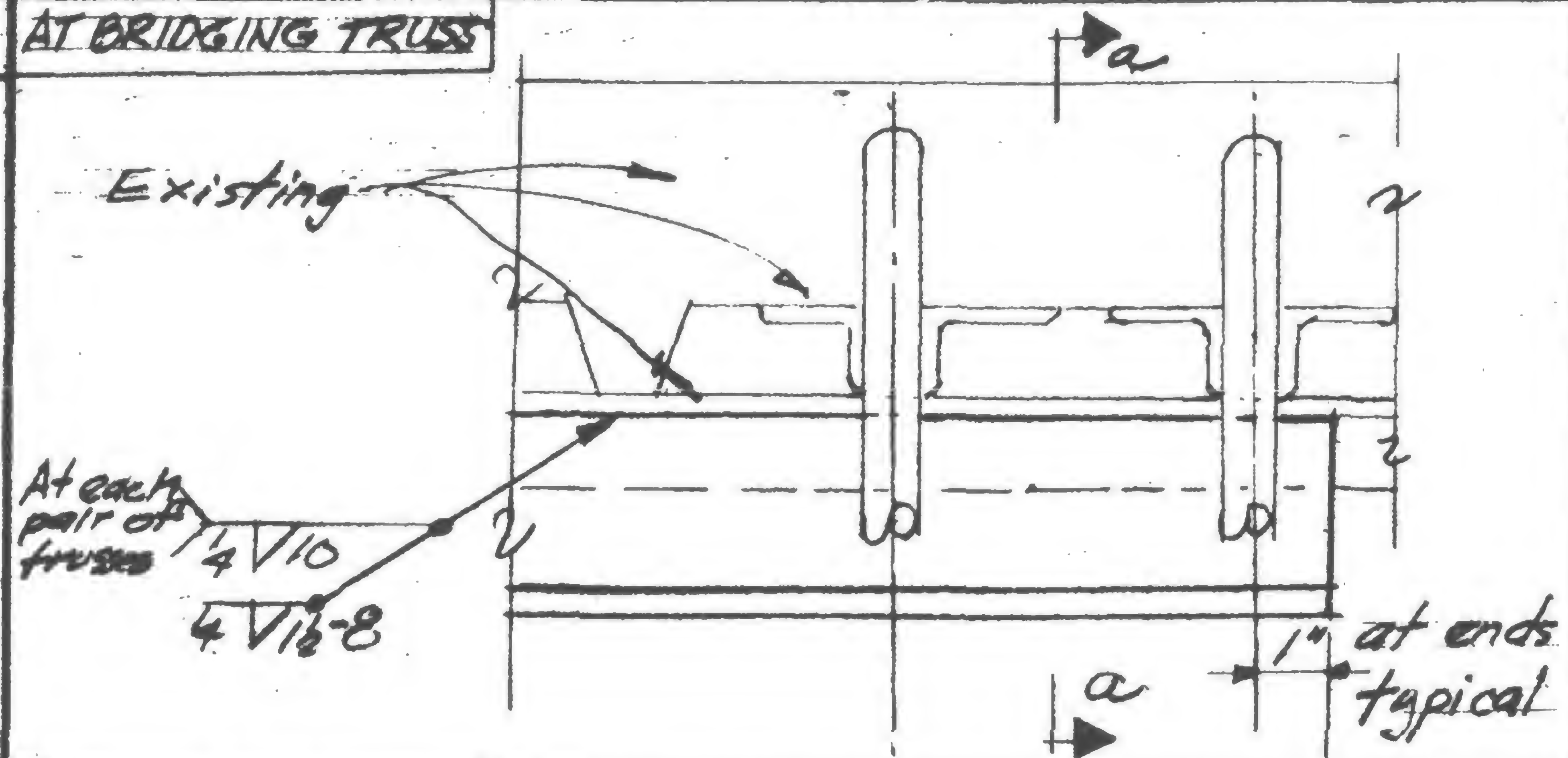
Note: No reinforcing required

17-A-754.6

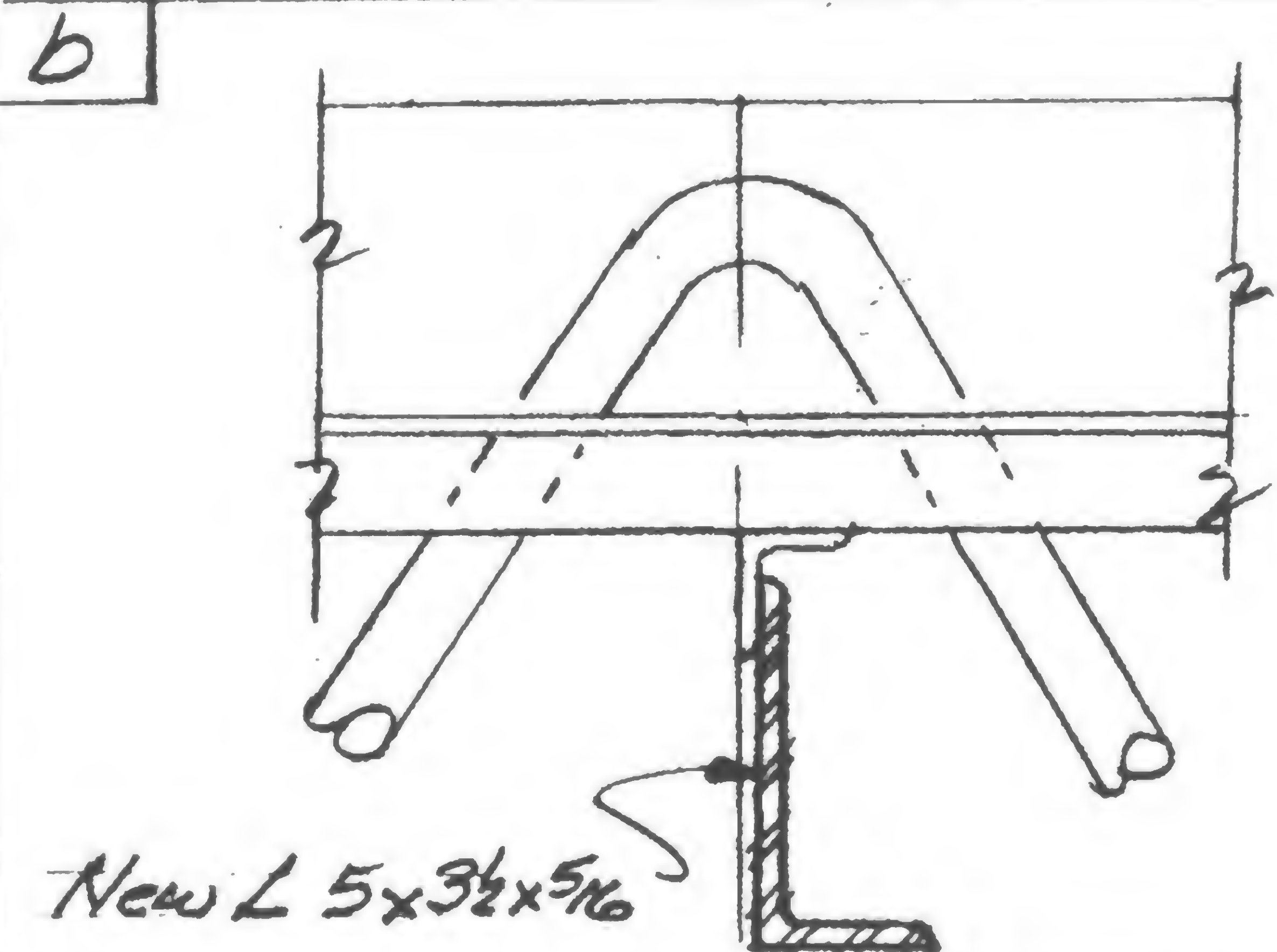
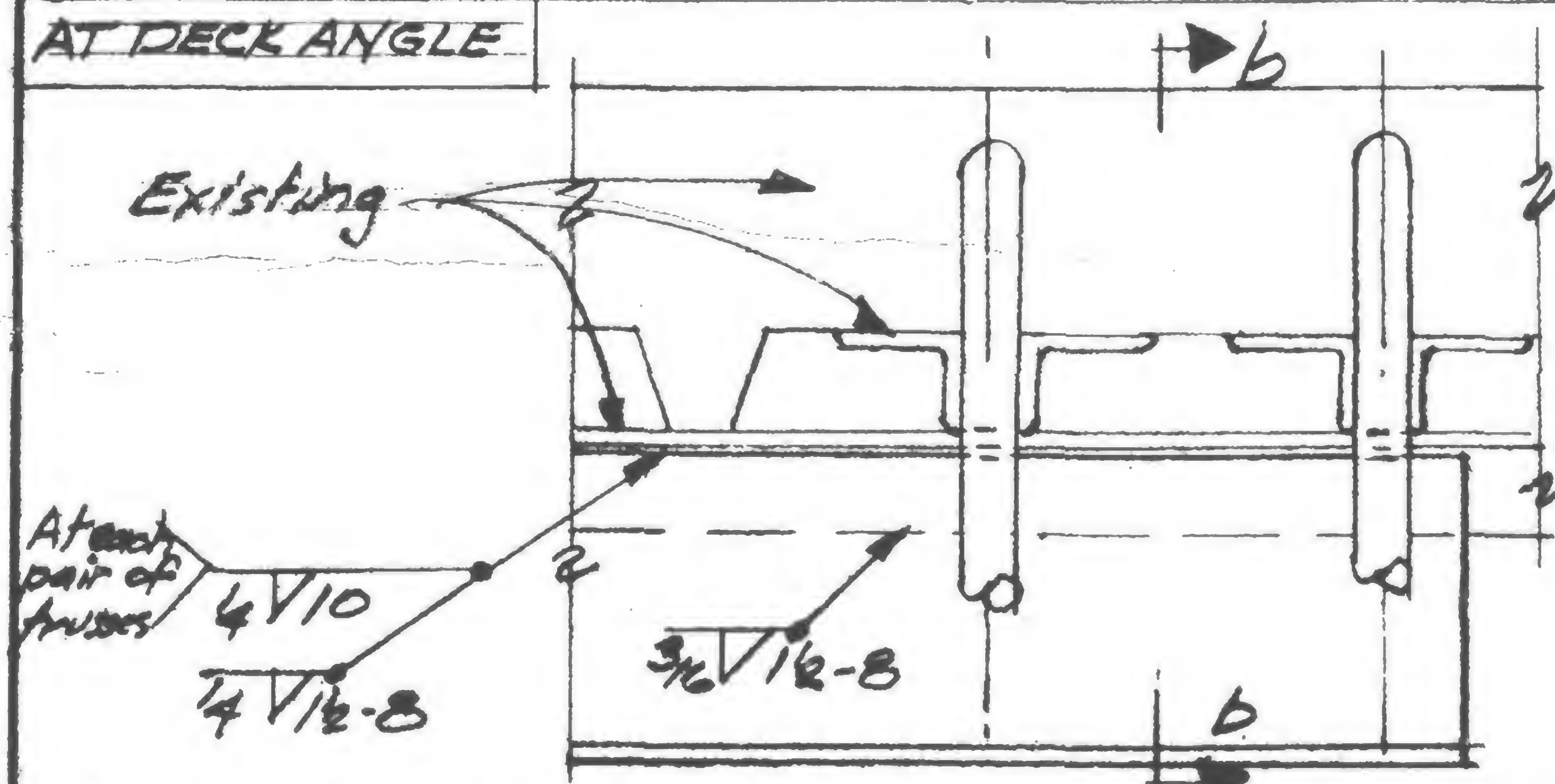


REVISIONS

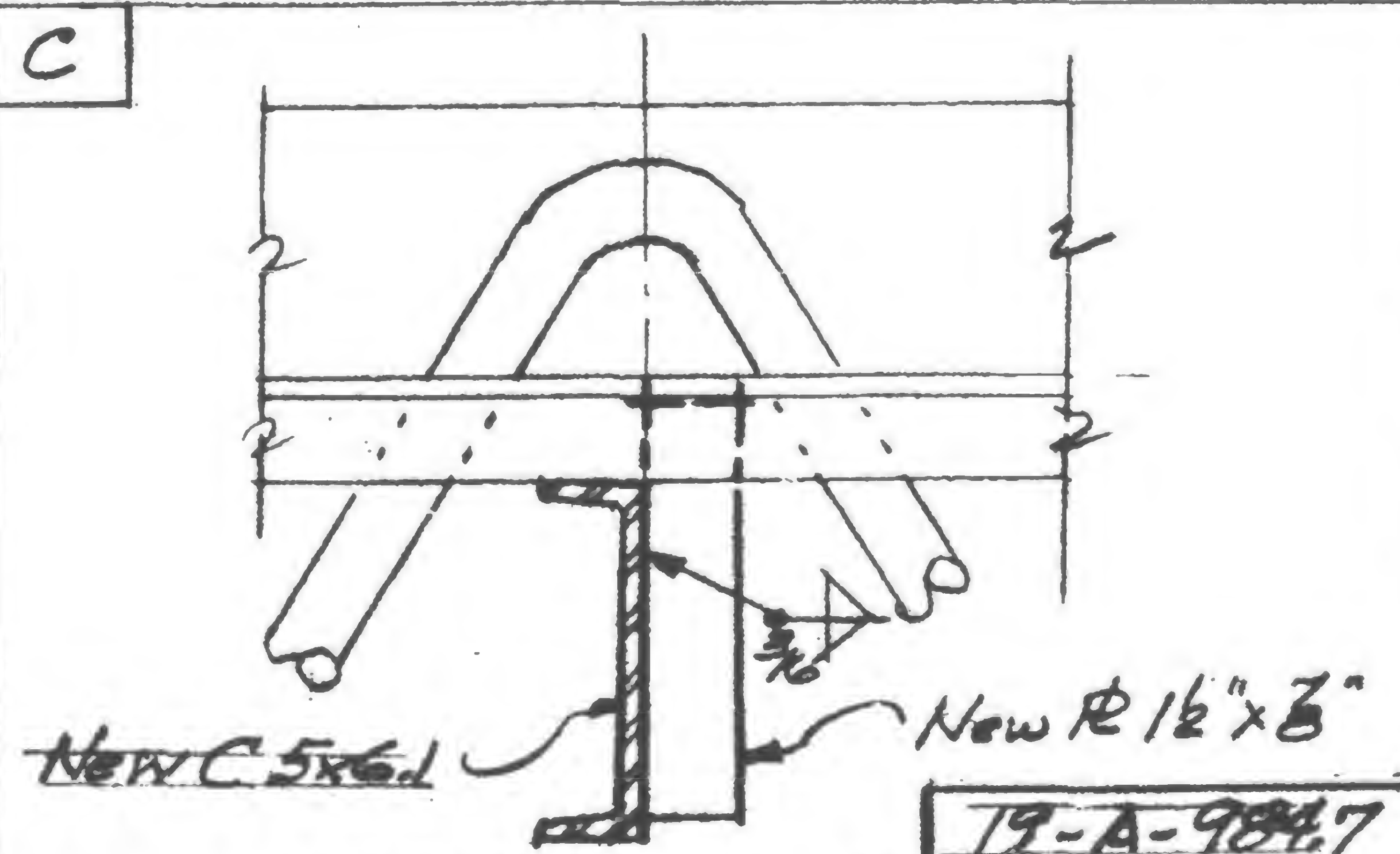
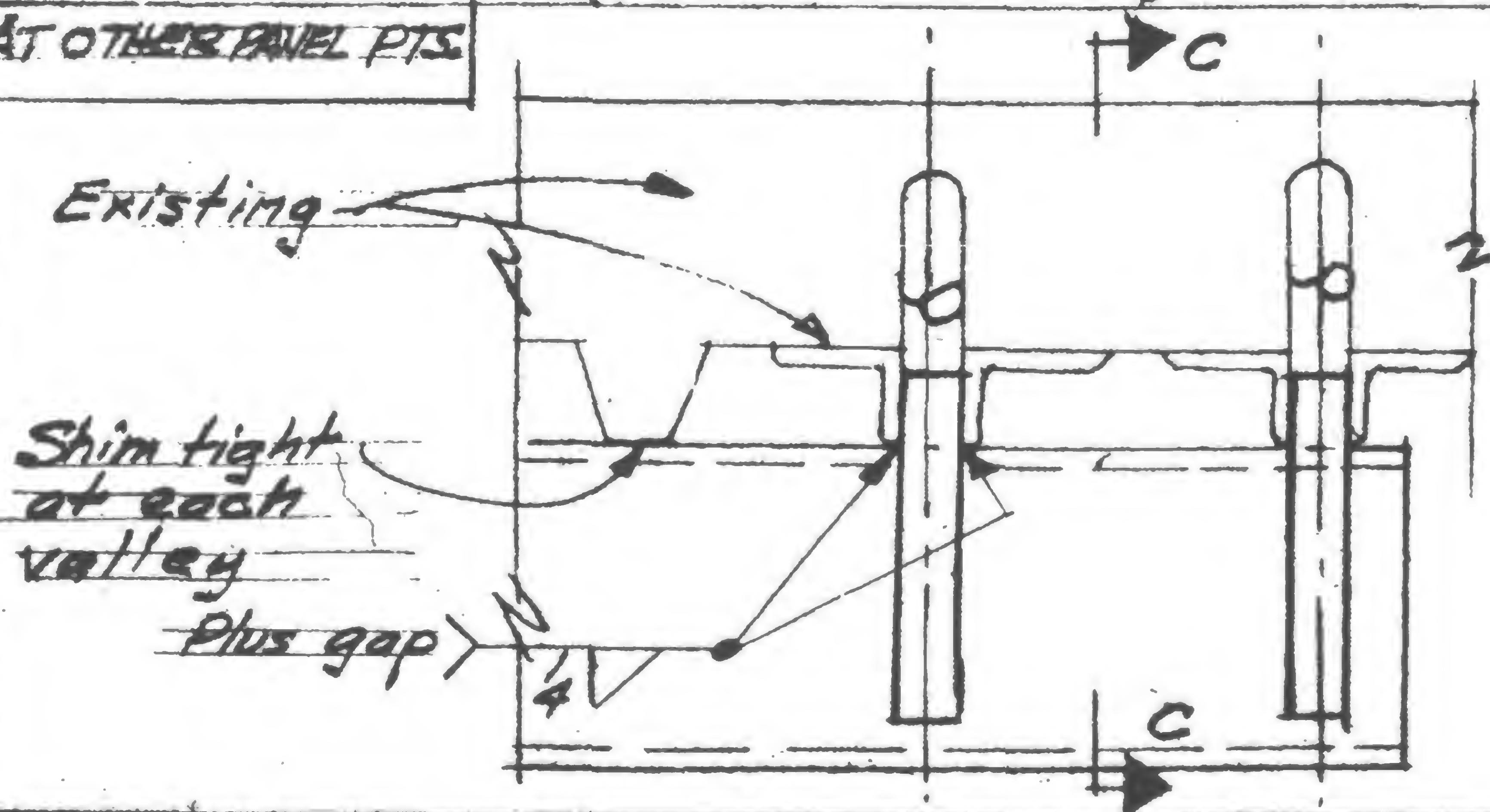
**AT BRIDGING TRUSS**



**AT DECK ANGLE**



**AT OTHER PANEL PTS**



SIGNED

DRAWN

REVIEWED  
**WAB**

**19-A-984.7**



REVISIONS

10/5/79  $\Delta$   
10/15/79  $\Delta$   
1/30/79  $\Delta$   
1/30/80  $\Delta$

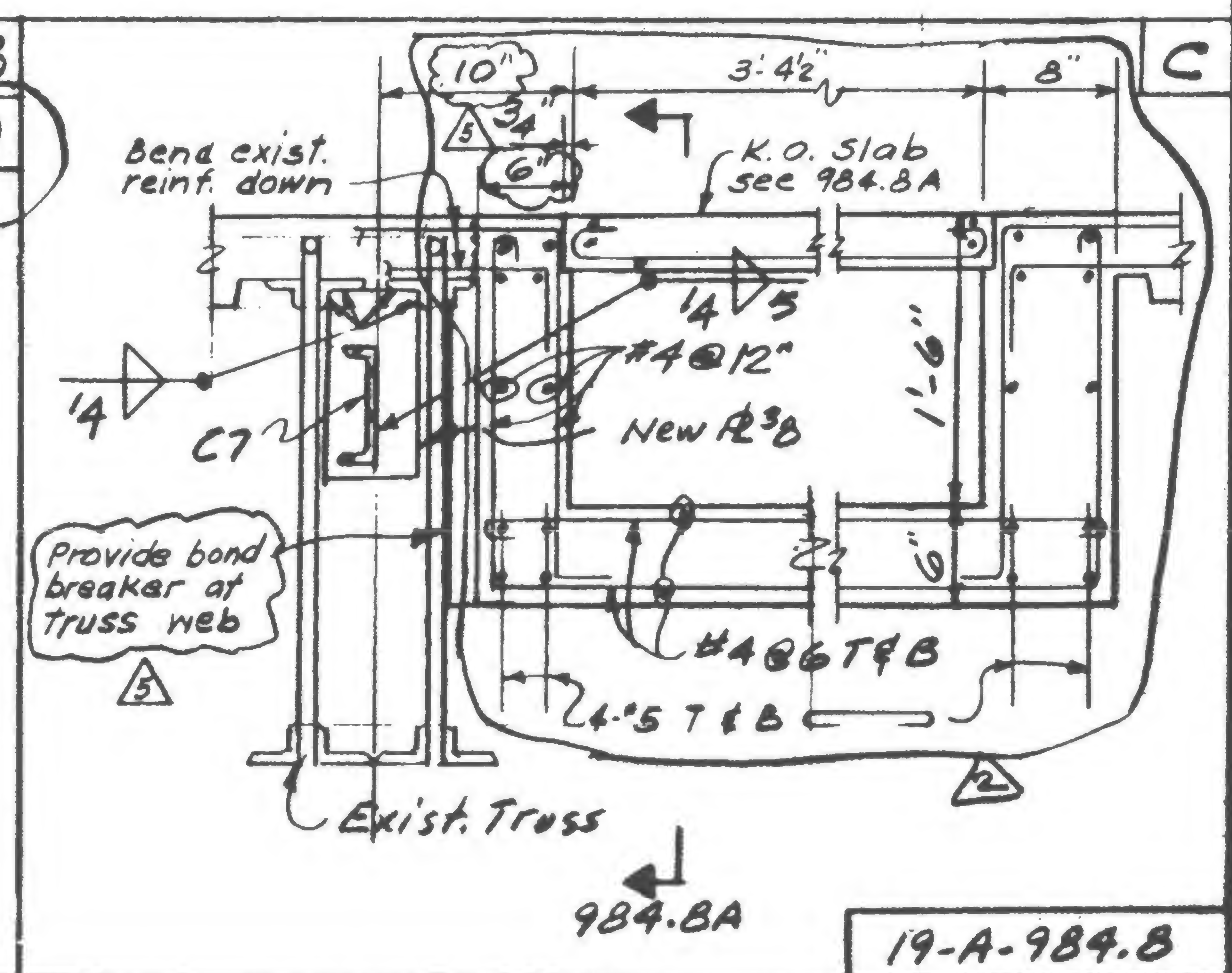
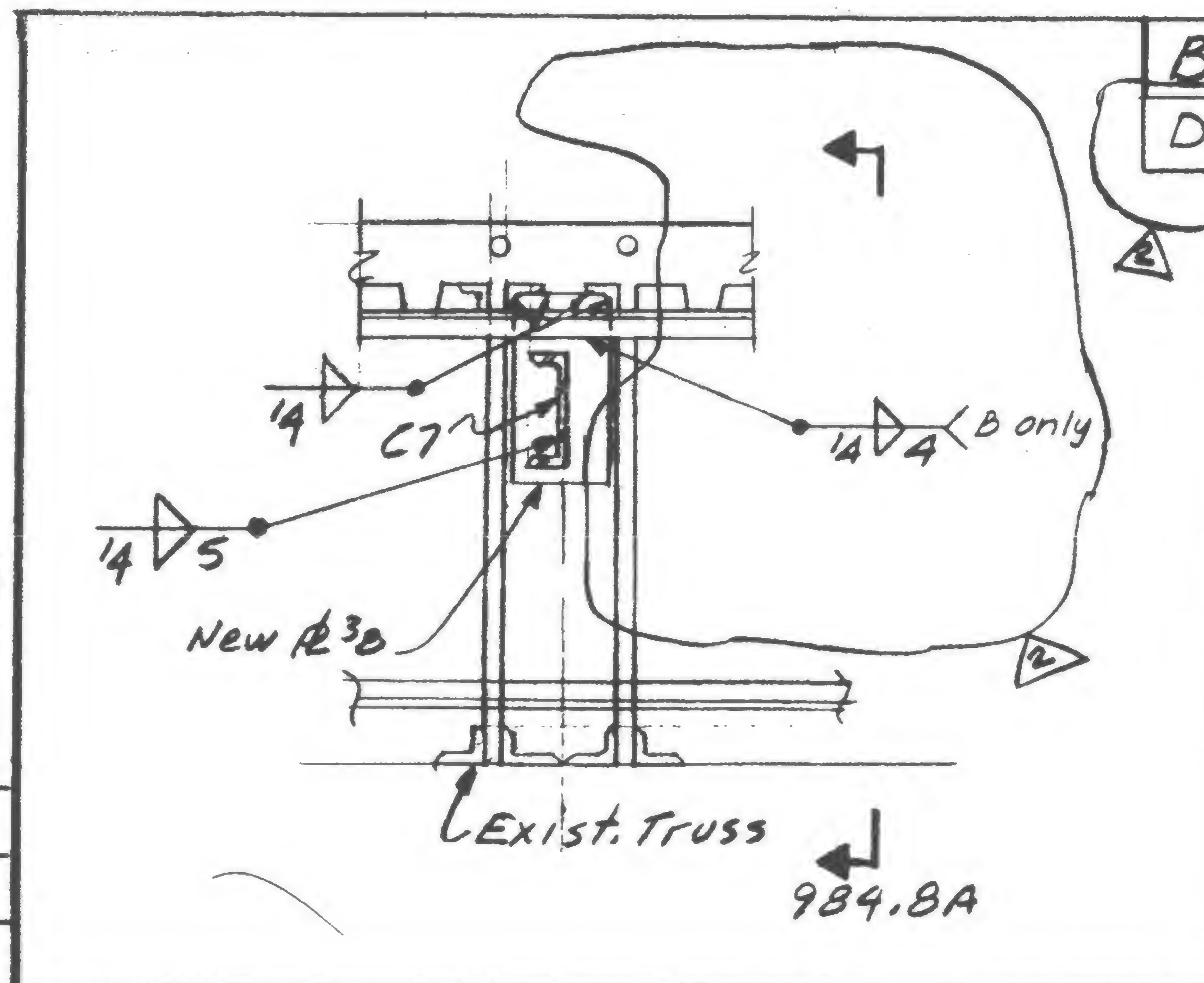
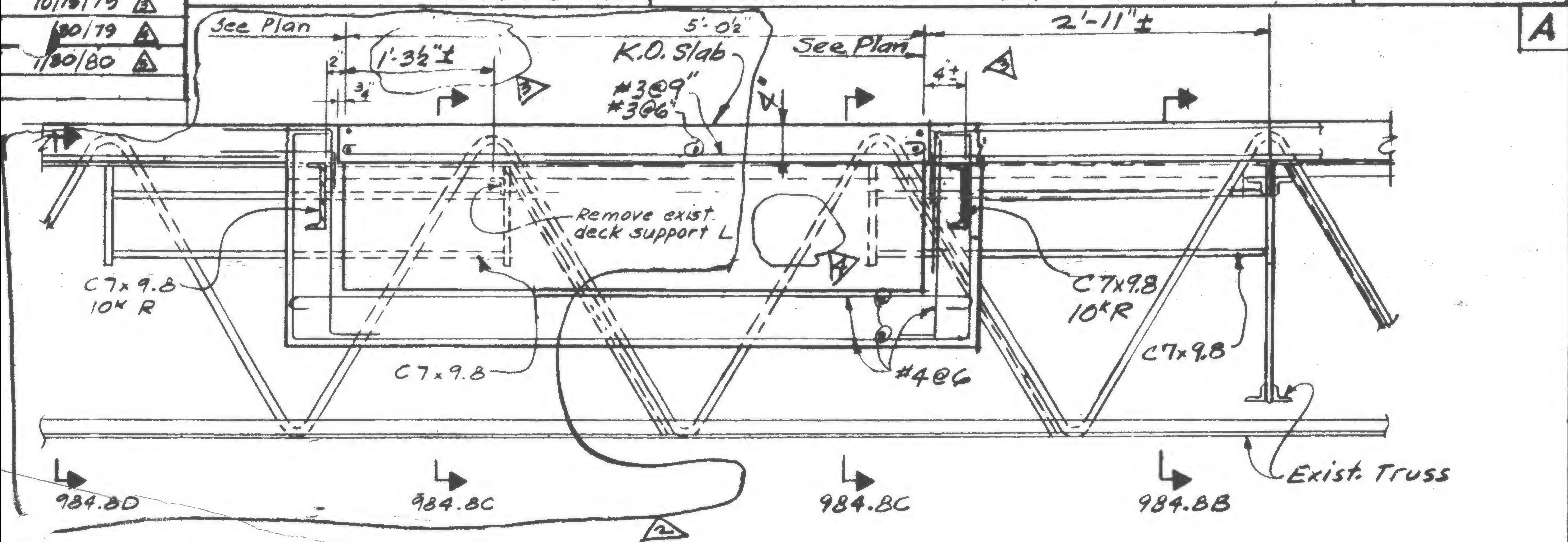
SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

WTC ~~10071101~~

PROJECT THE WORLD TRADE CENTER TITLE DUMBWAITER PIT SUPPORT - FLOOR 106

DATE 5-9-79





ms

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS - FL 106

DATE 1-7-71

REVISIONS

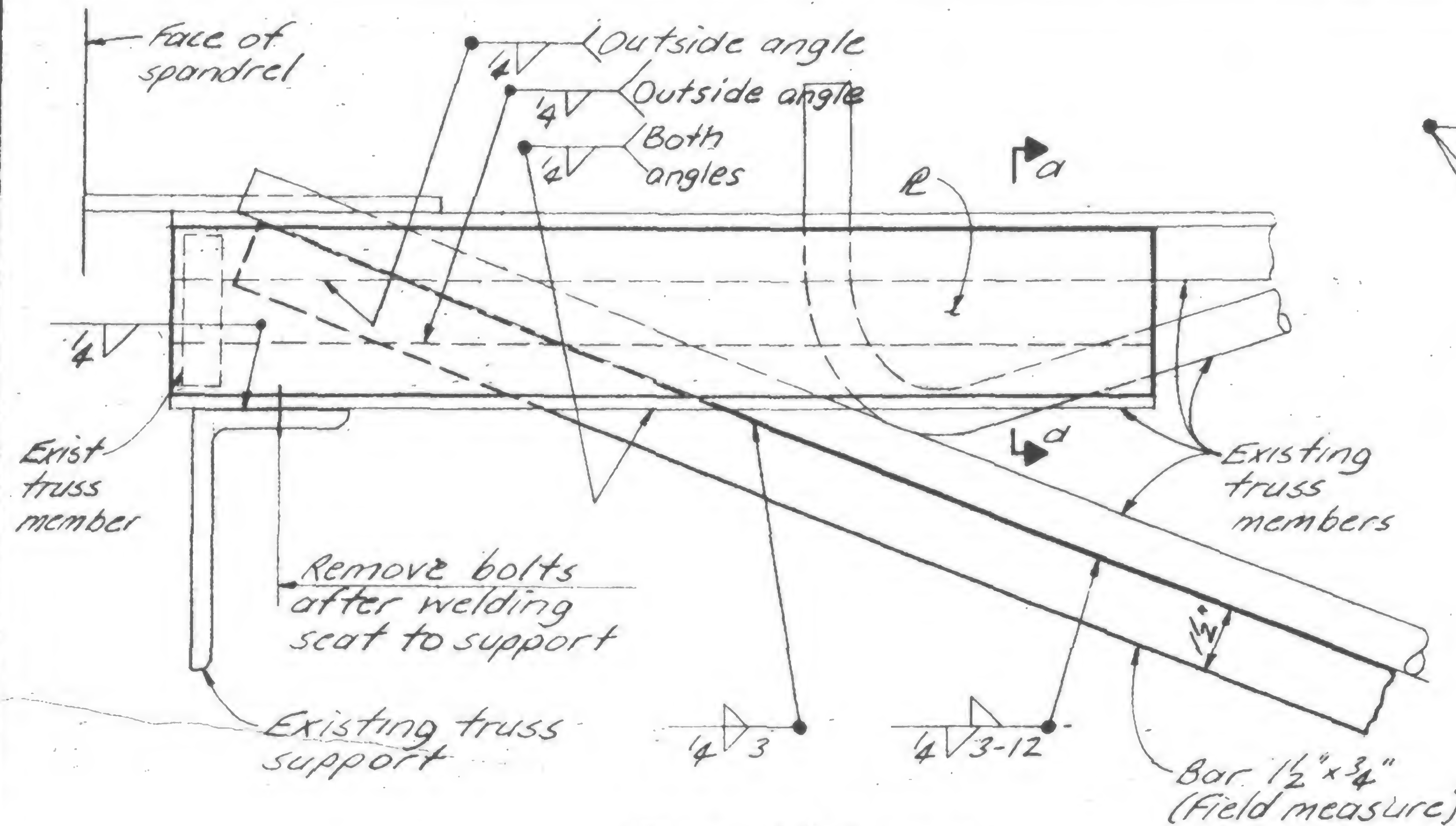
1/21/71

7/30/71

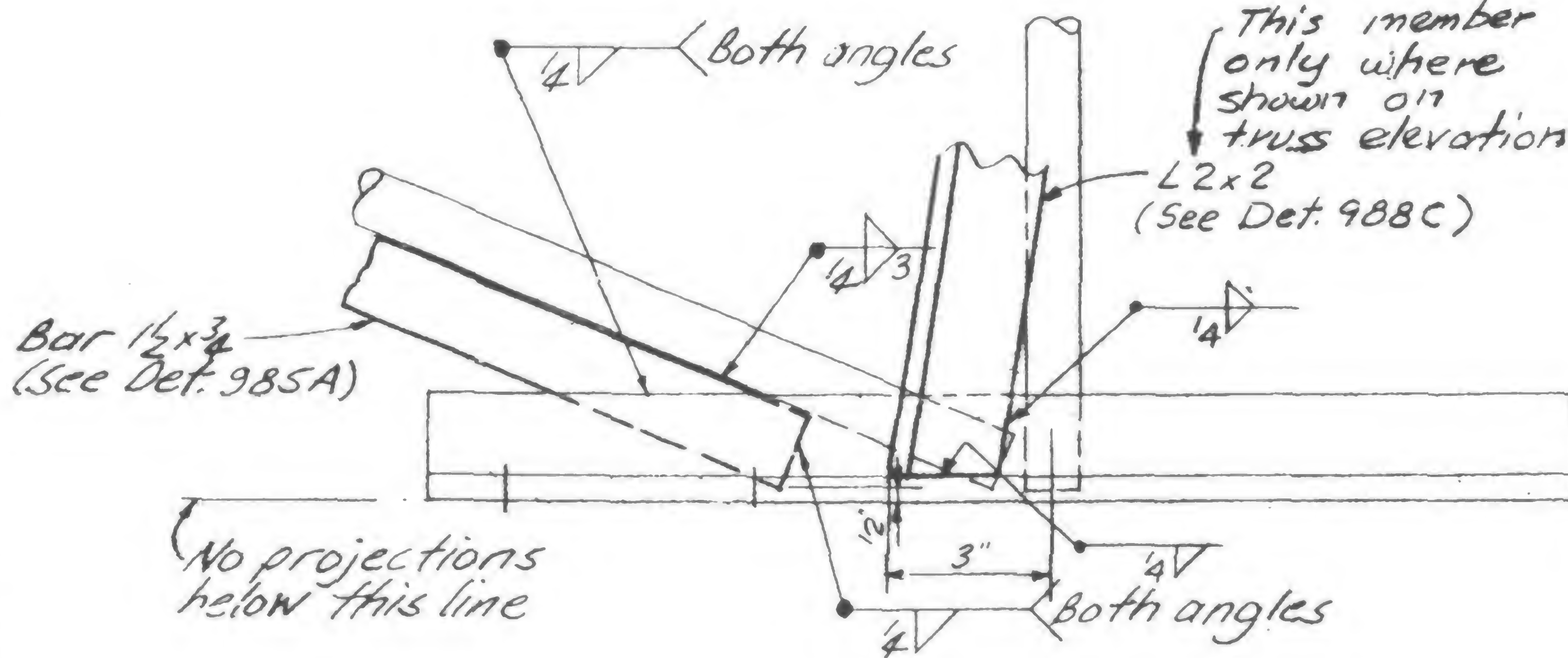
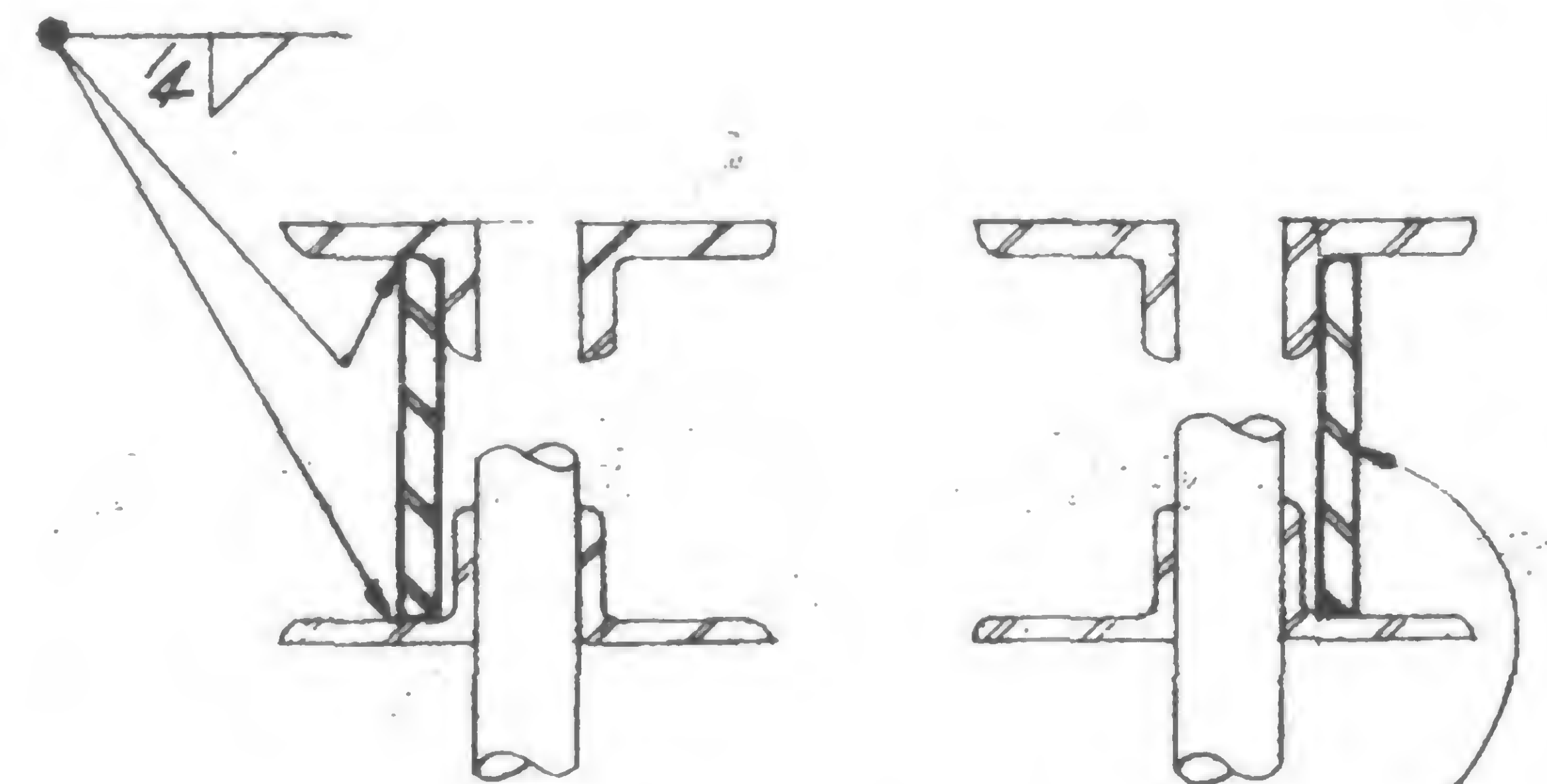
10/6/71

Printed

5/9/79



Detail 985A



Detail 985B

Notes:

1. All added material to be A36 unless otherwise noted.
2. If parts to be joined with fillet welds cannot be brought into direct contact, the fillet weld shall be increased in size above that indicated in the drawing. The increase in size shall be equal to or greater than the gap.
3. L3x2 deck supports that are disconnected to make the required repairs shall be re-attached after the repair is completed.



SIGNED

DRAWN

J. Adams

REVIEWED

W. Brewer

19-A-985.1







PROJECT

THE WORLD TRADE CENTER

TITLE

TRUSS DETAILS - FL 106

DATE

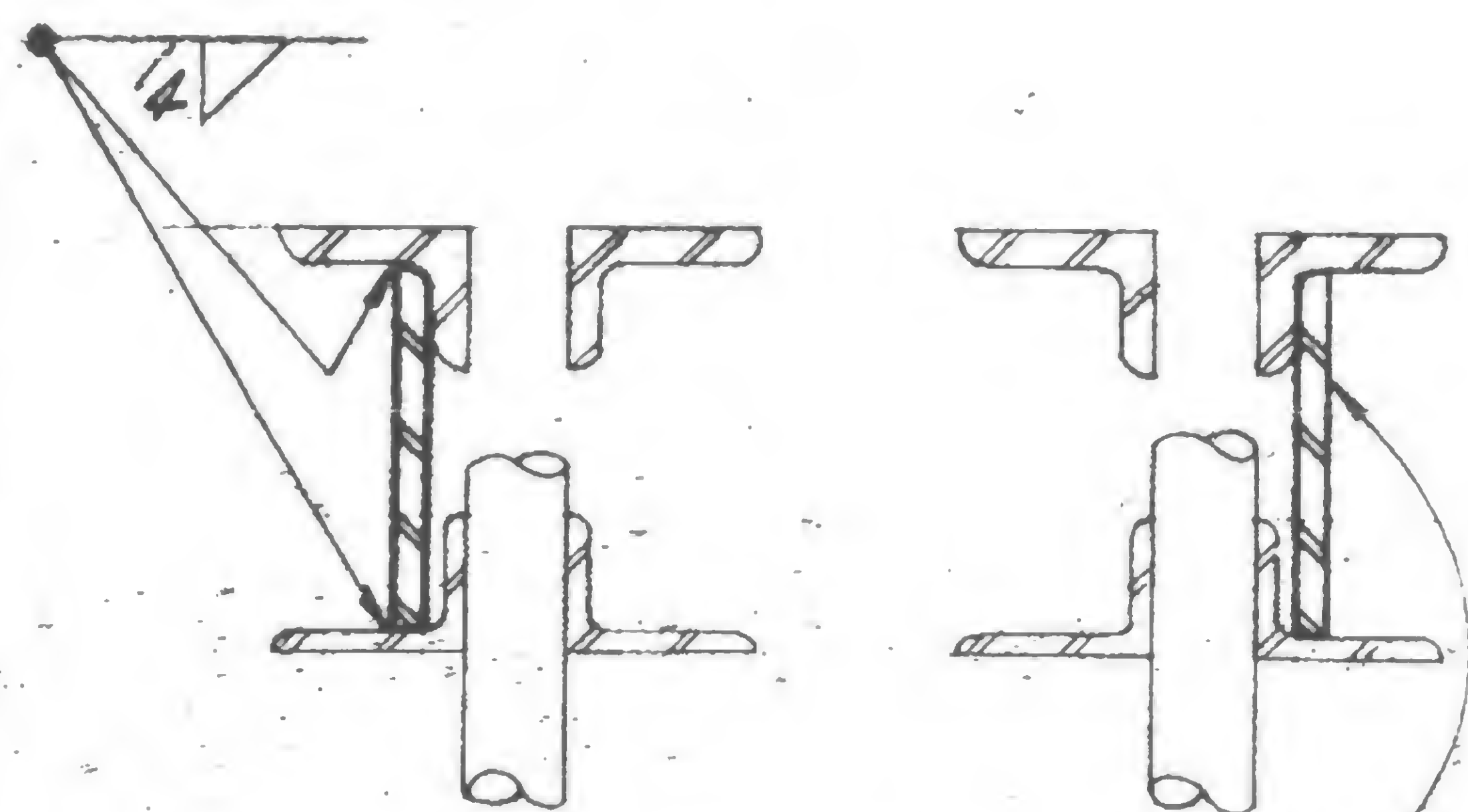
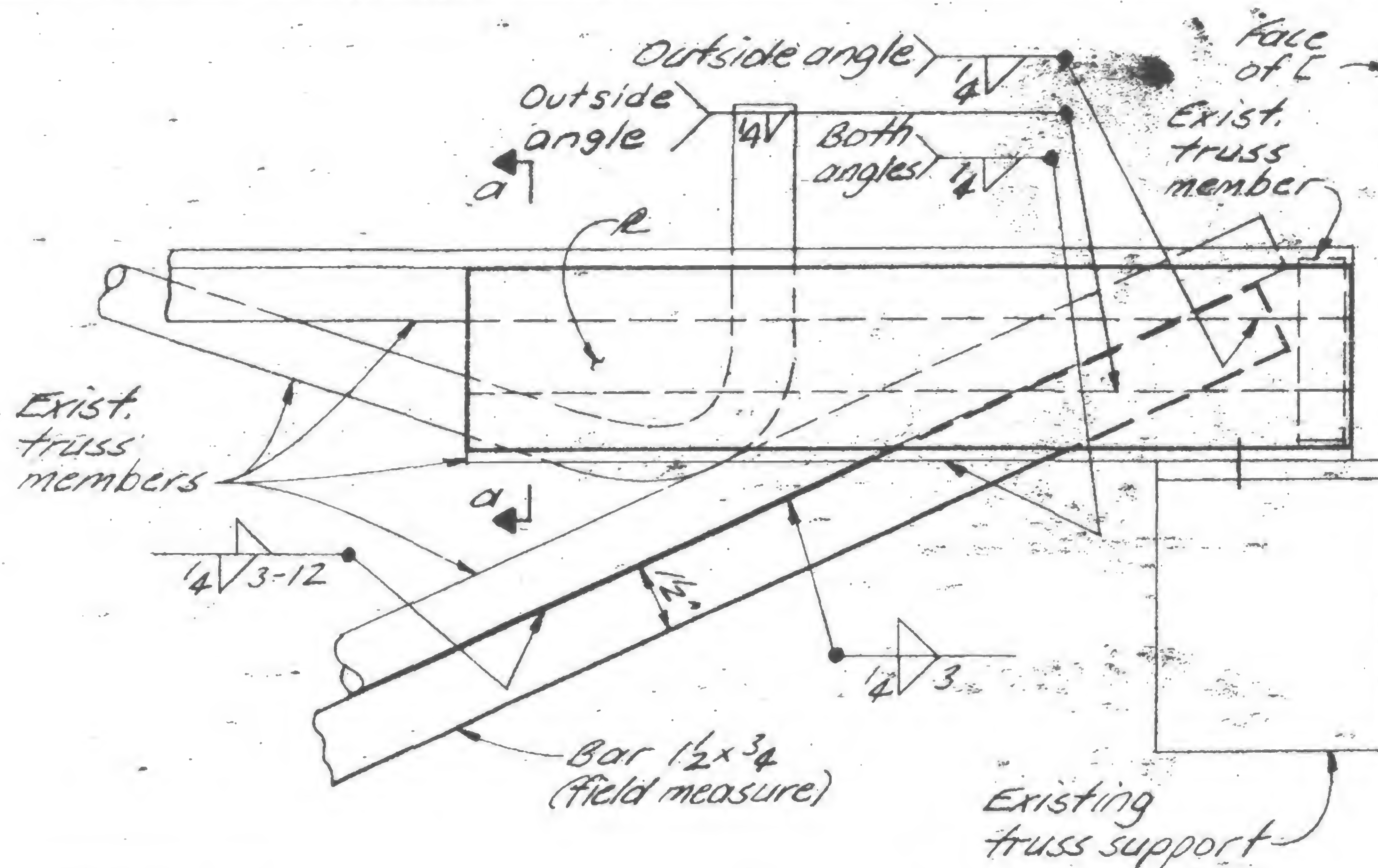
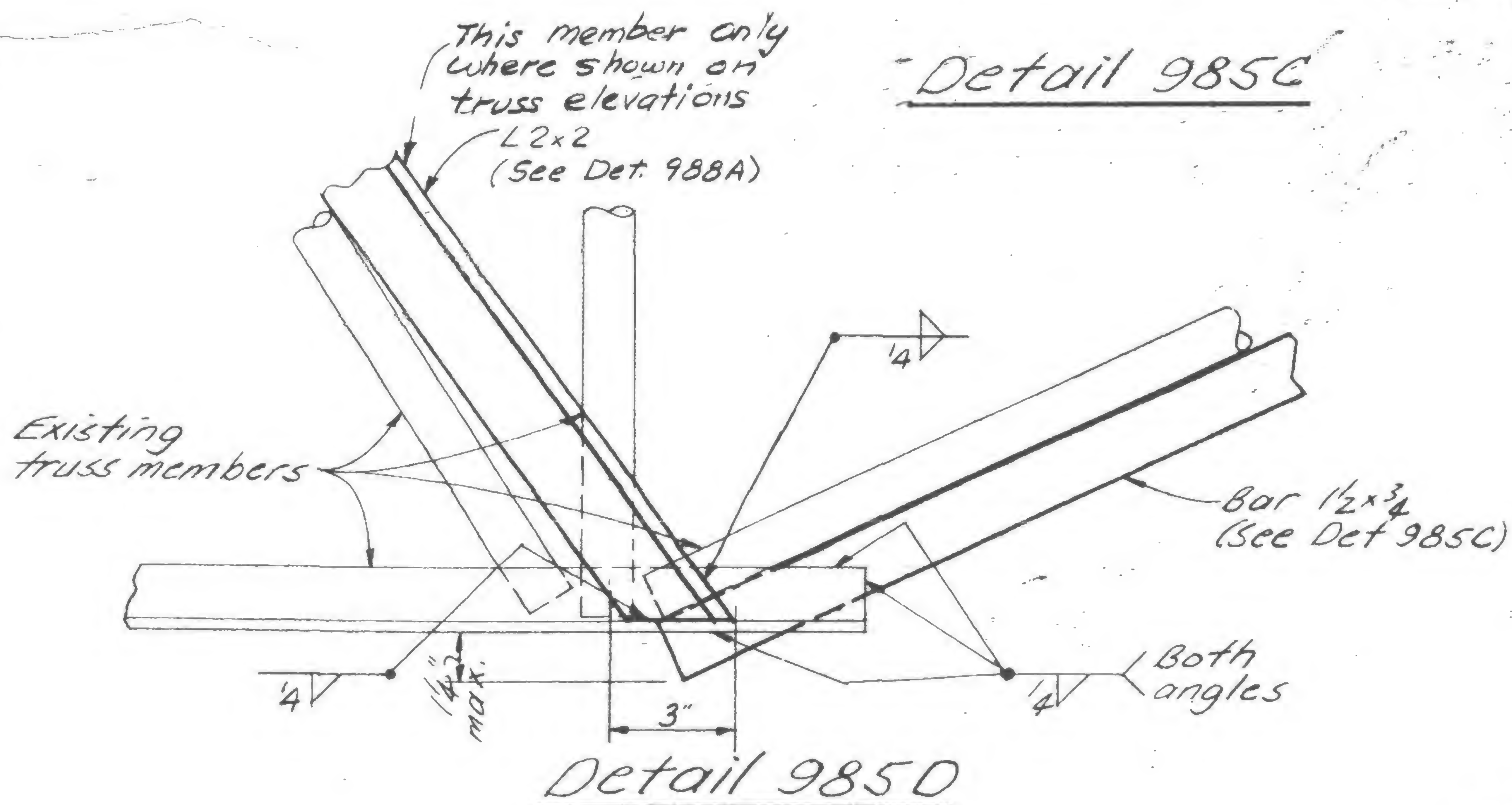
1-7-71

## REVISIONS

1/27/71

7/30/71

10/6/71

Printed  
5/9/79Section a-aDetail 985CDetail 985D

SIGNED

DRAWN

REVIEWED

W. R. Robertson

19-A-985.2



## REVISIONS

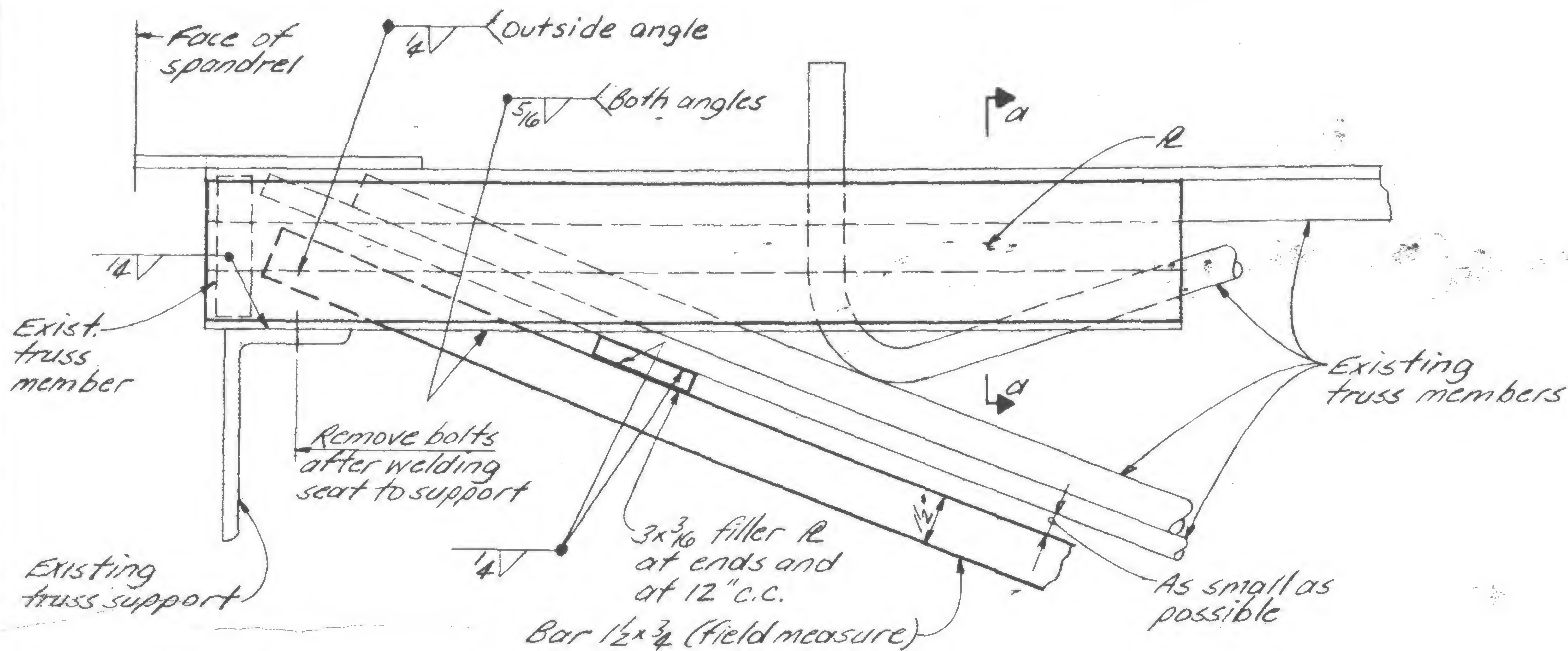
1/27/71

7/30/71

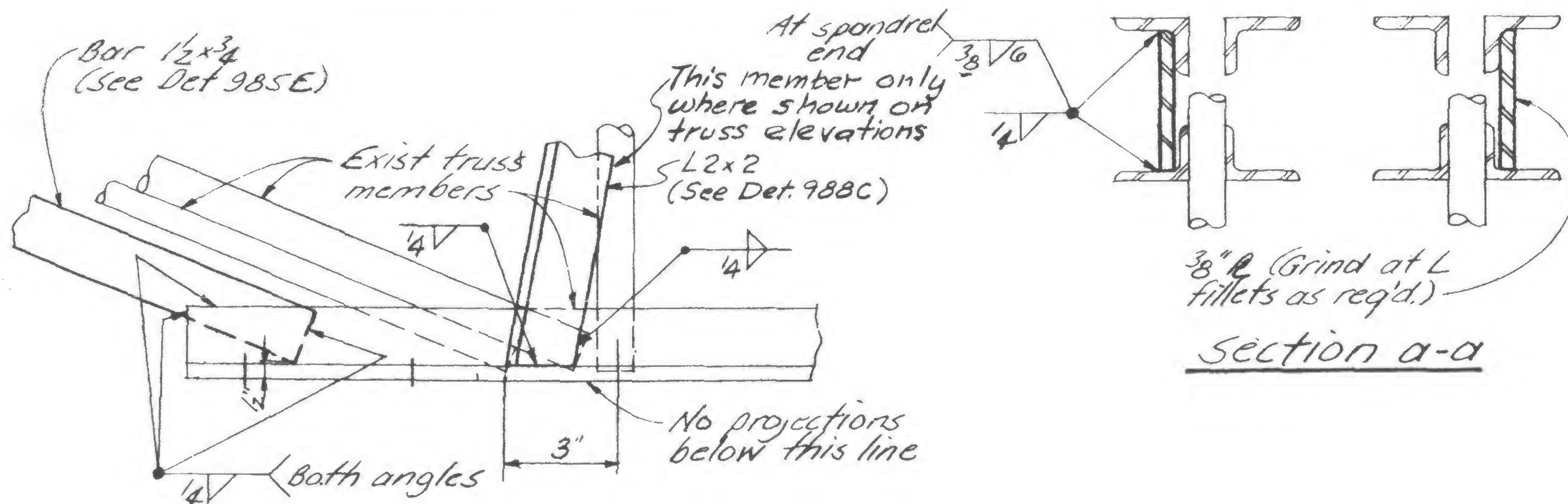
10/6/71

Printed

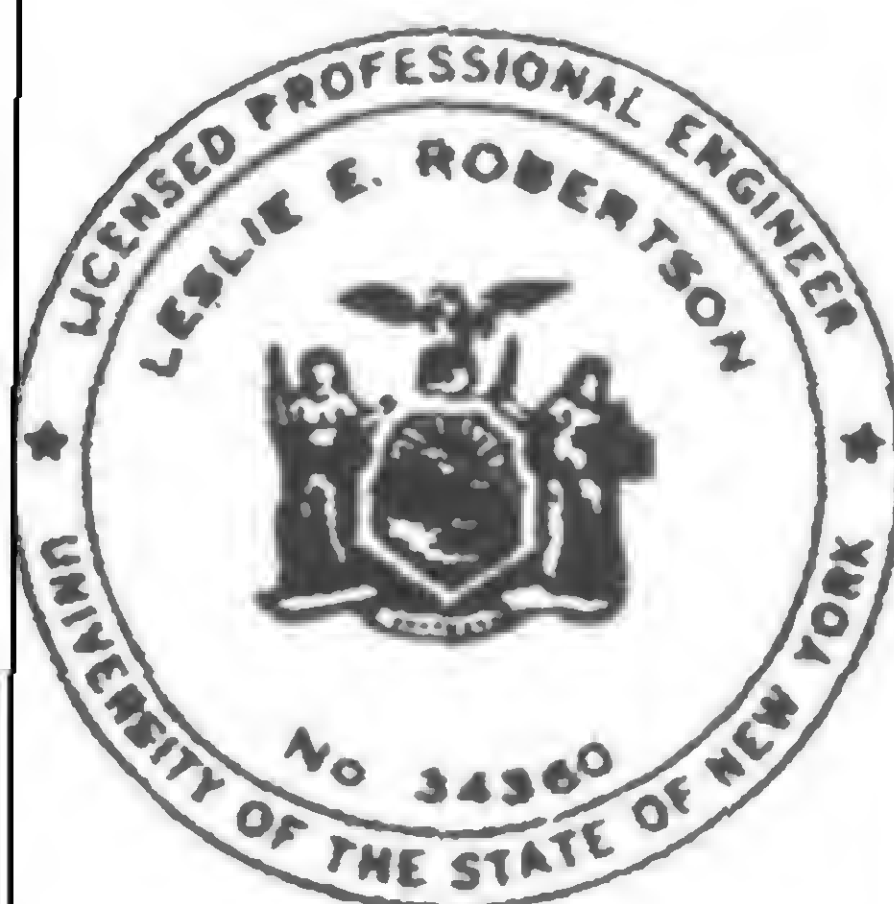
5/9/79



Detail 985E



Detail 985F



**SIGNED**

DRAWN  
Lanes

REVIEWED  
W. Brown.

19-A-985.3



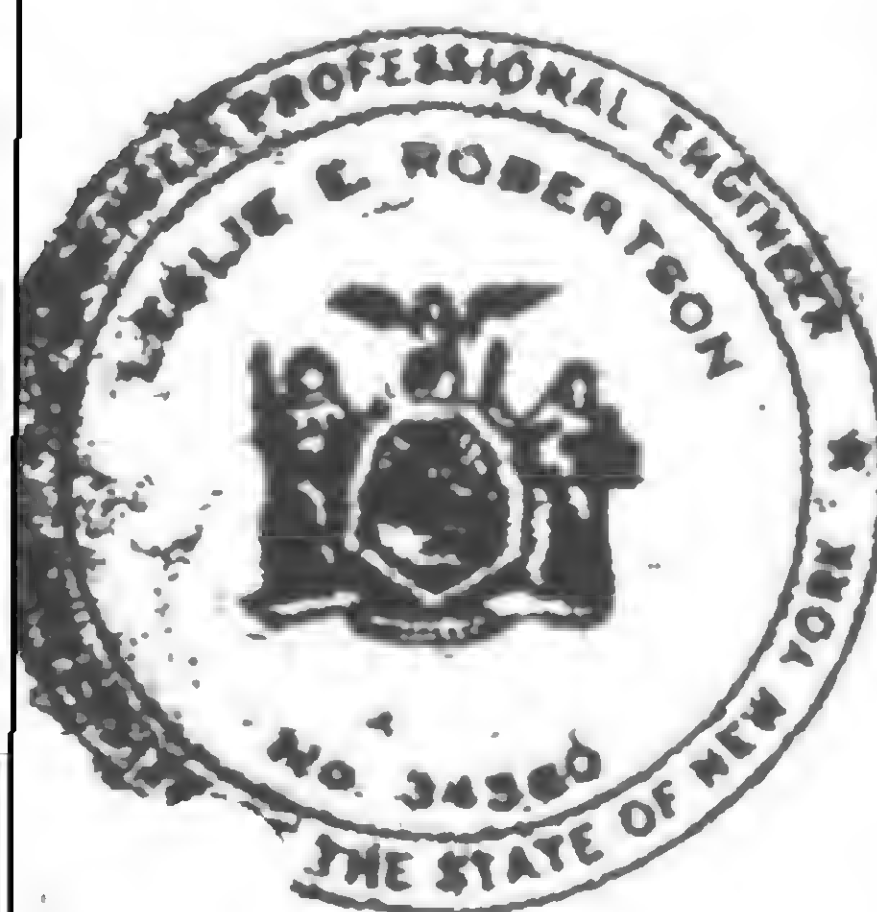
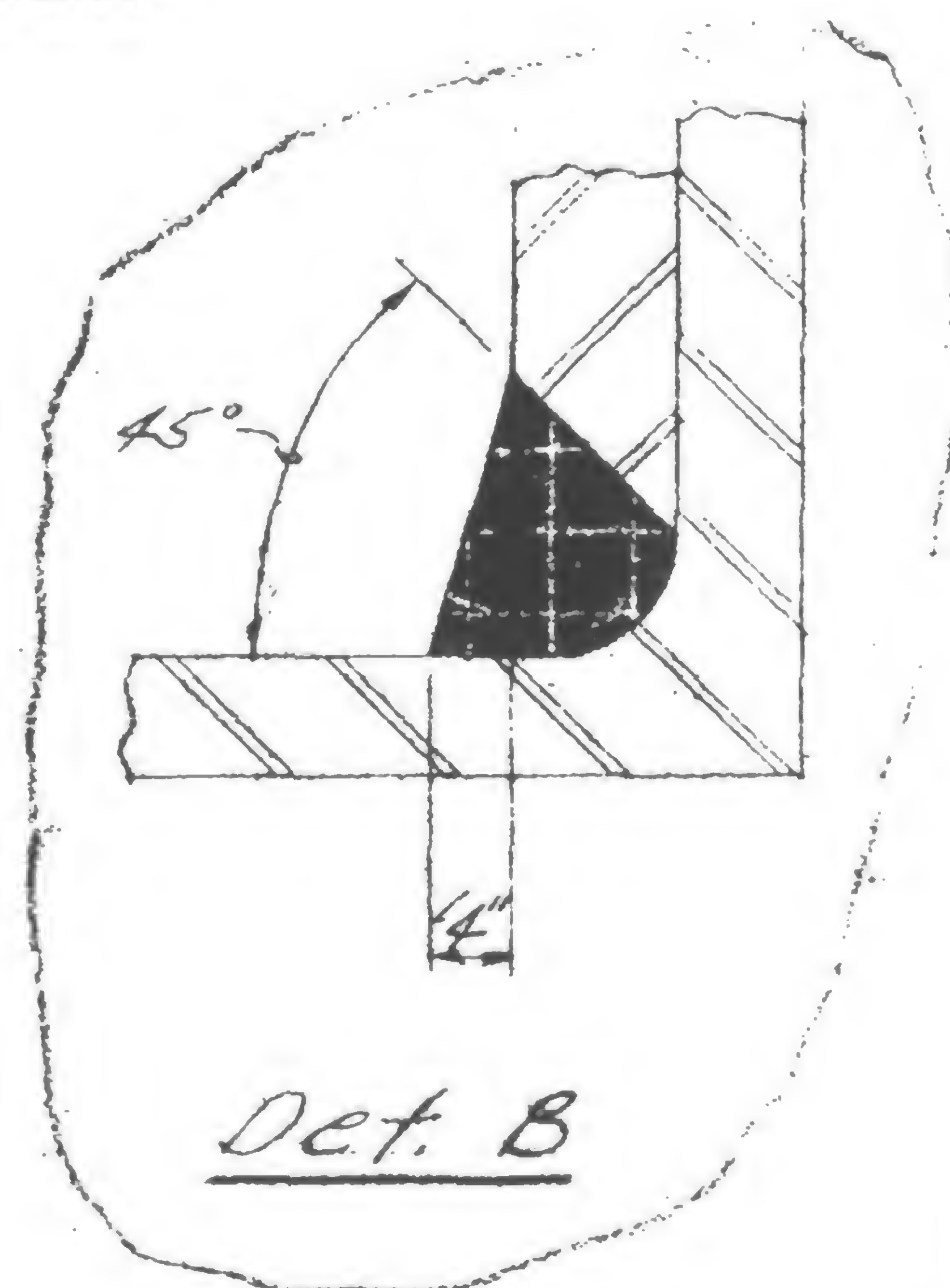
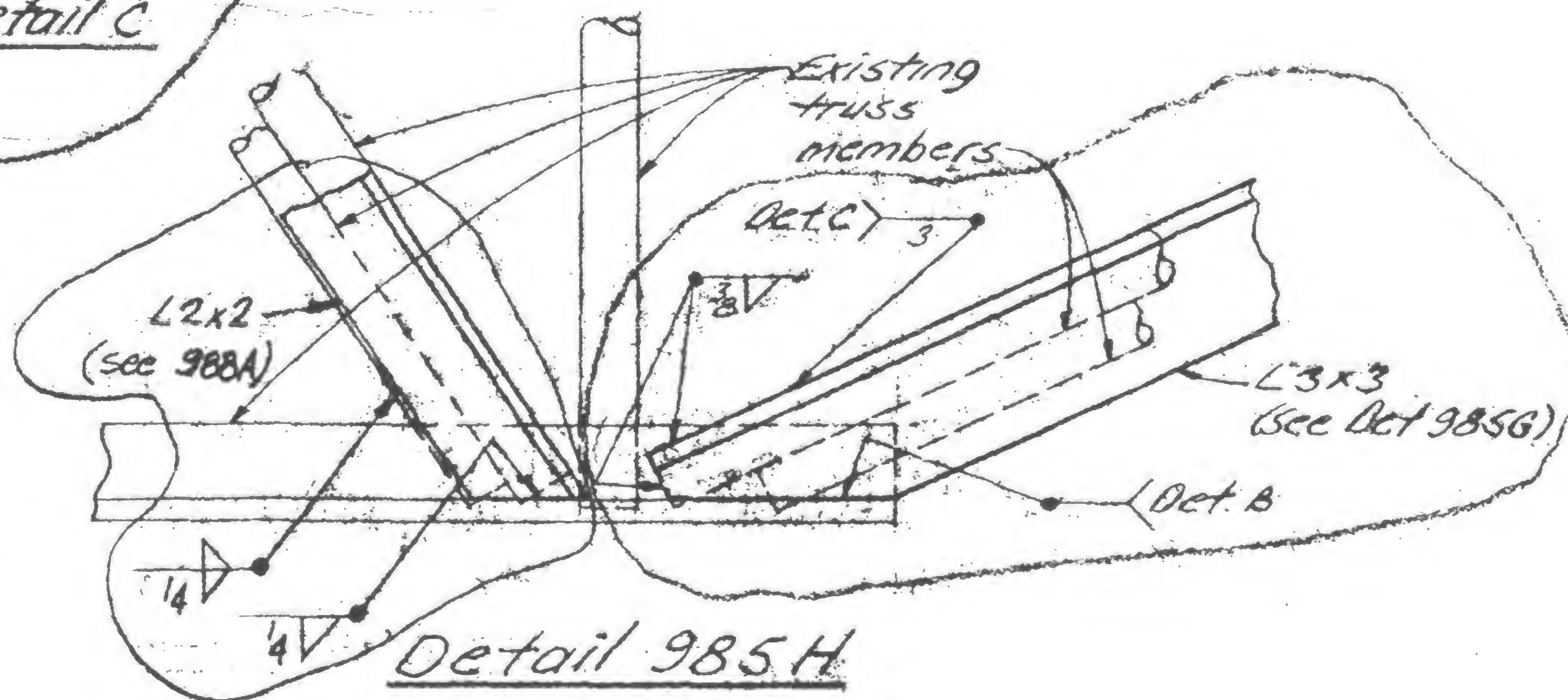
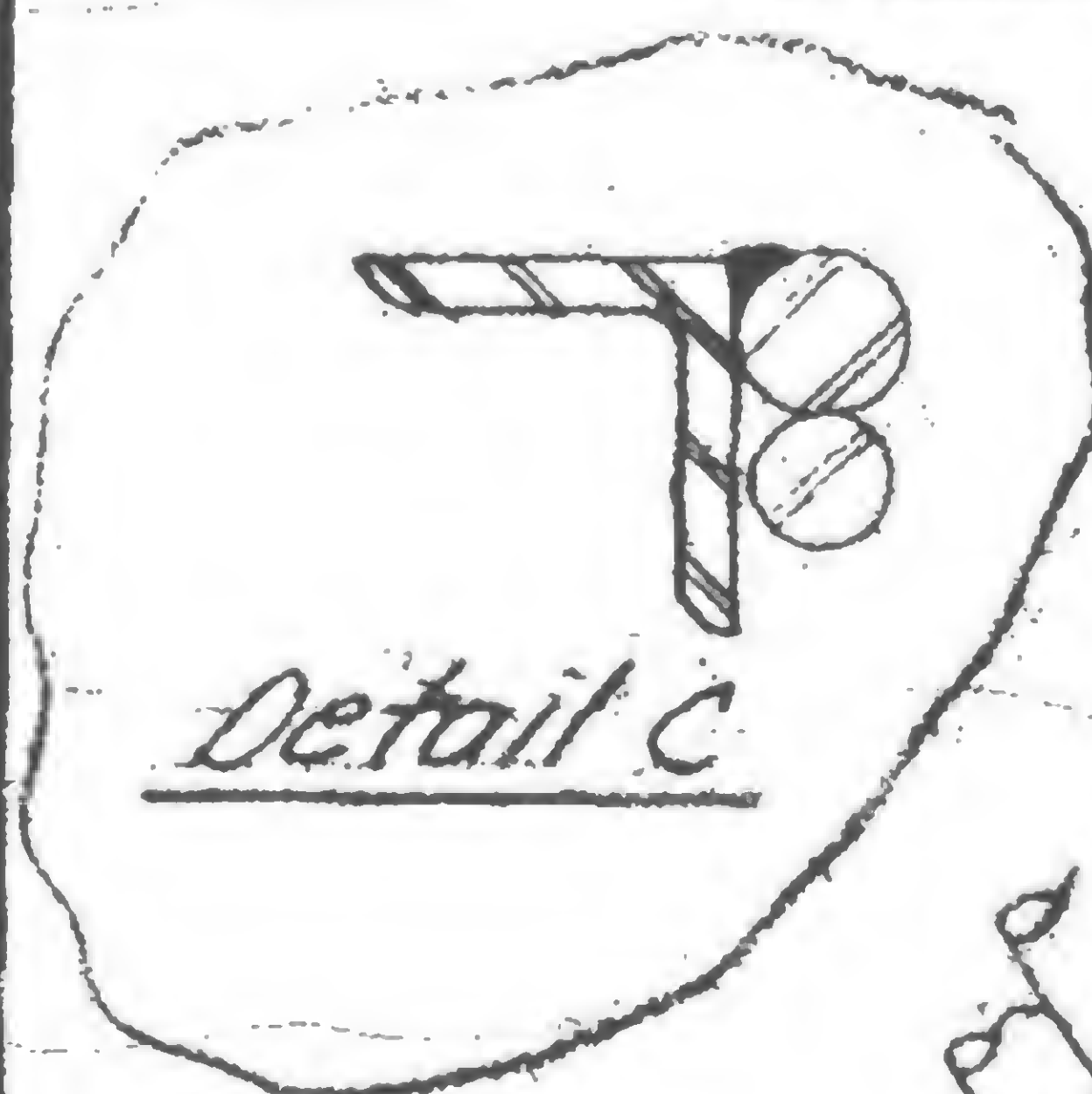
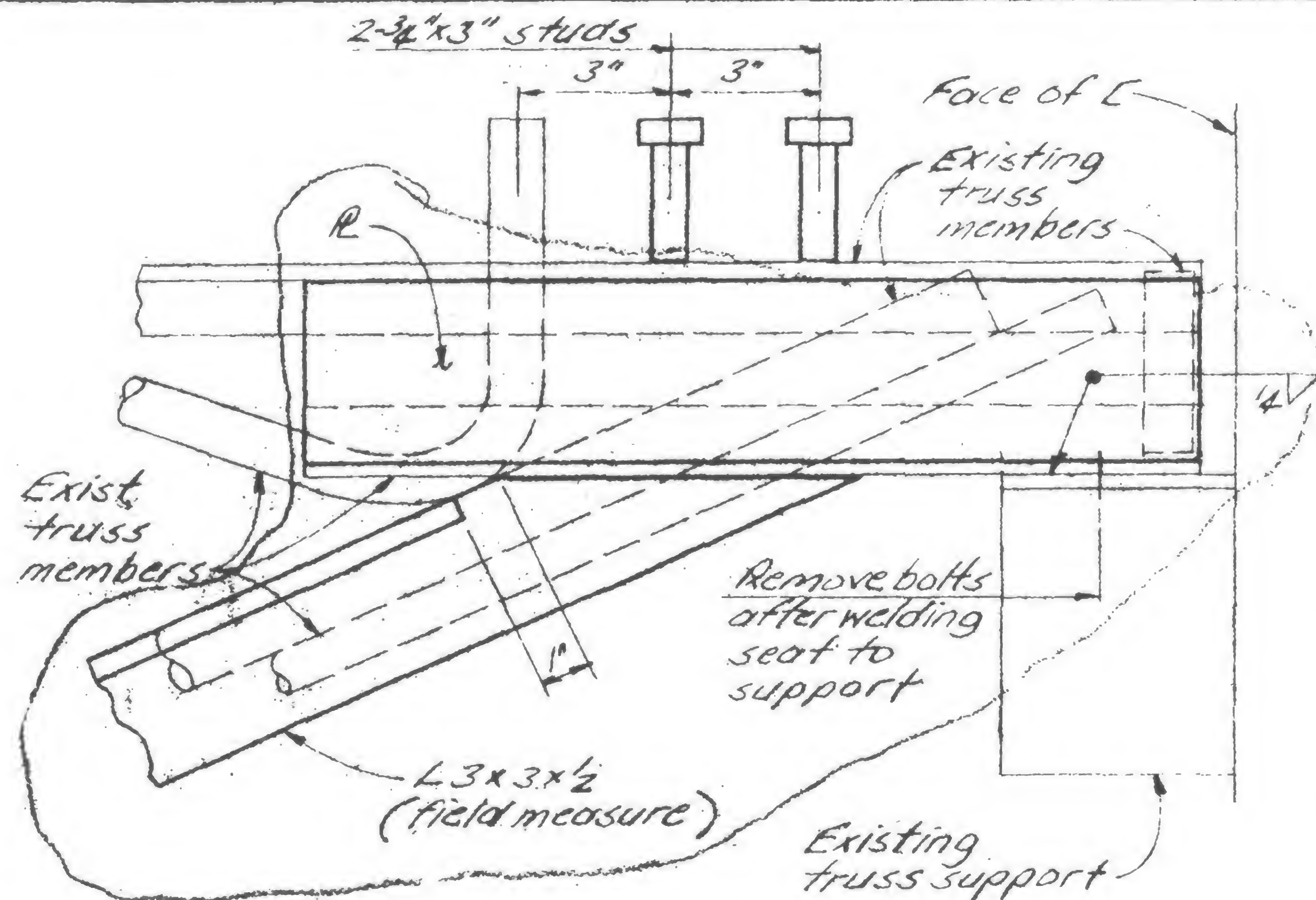
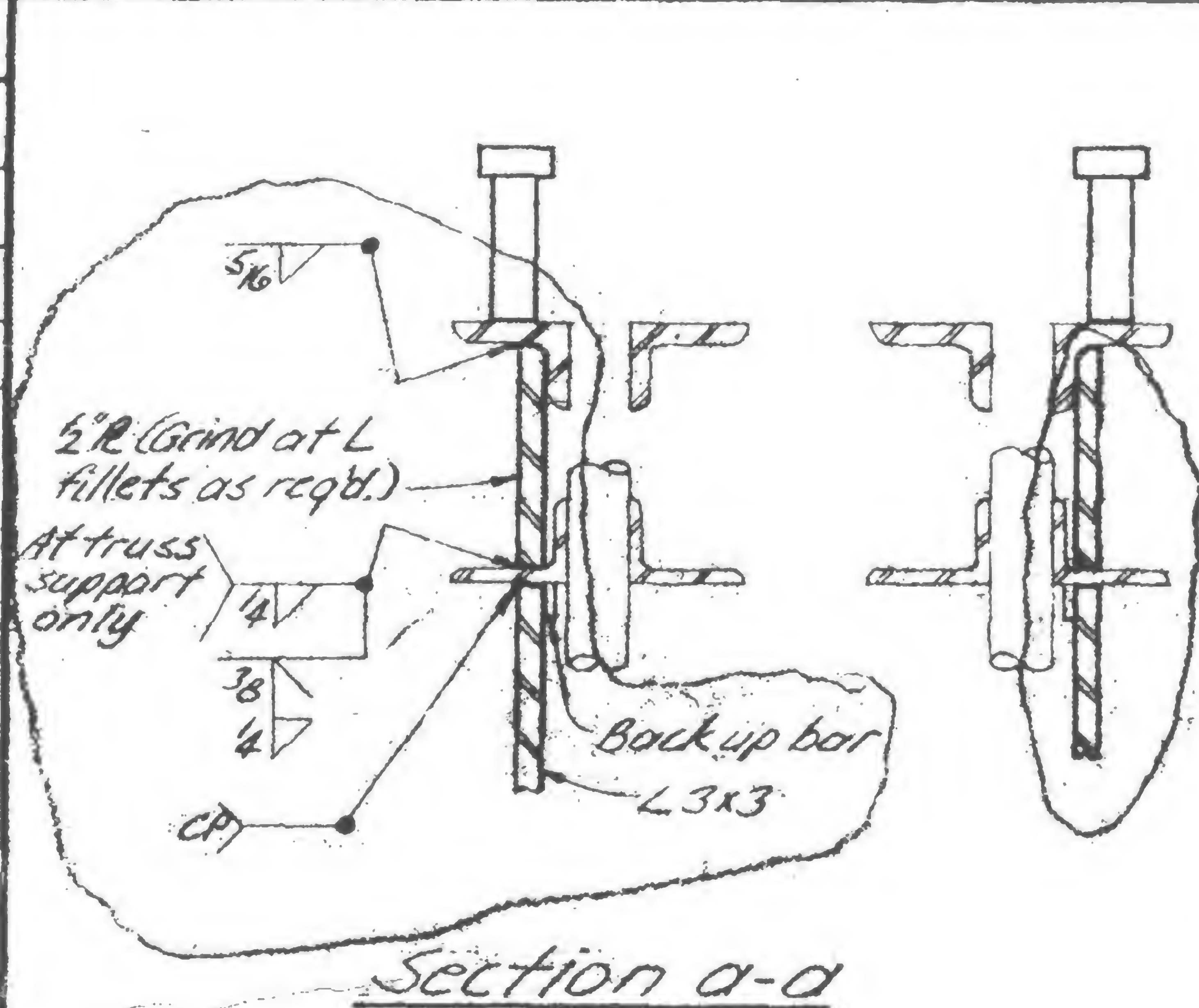
PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS - FL 106

DATE 1-7-71

REVISIONS

11/21/71  
7/30/71  
10/6/71  
5/9/79



DESIGNED

DRAWN

THA A

19-A-985.4



SEILING, HELLE CHRISTIANSEN, ROBERTSON

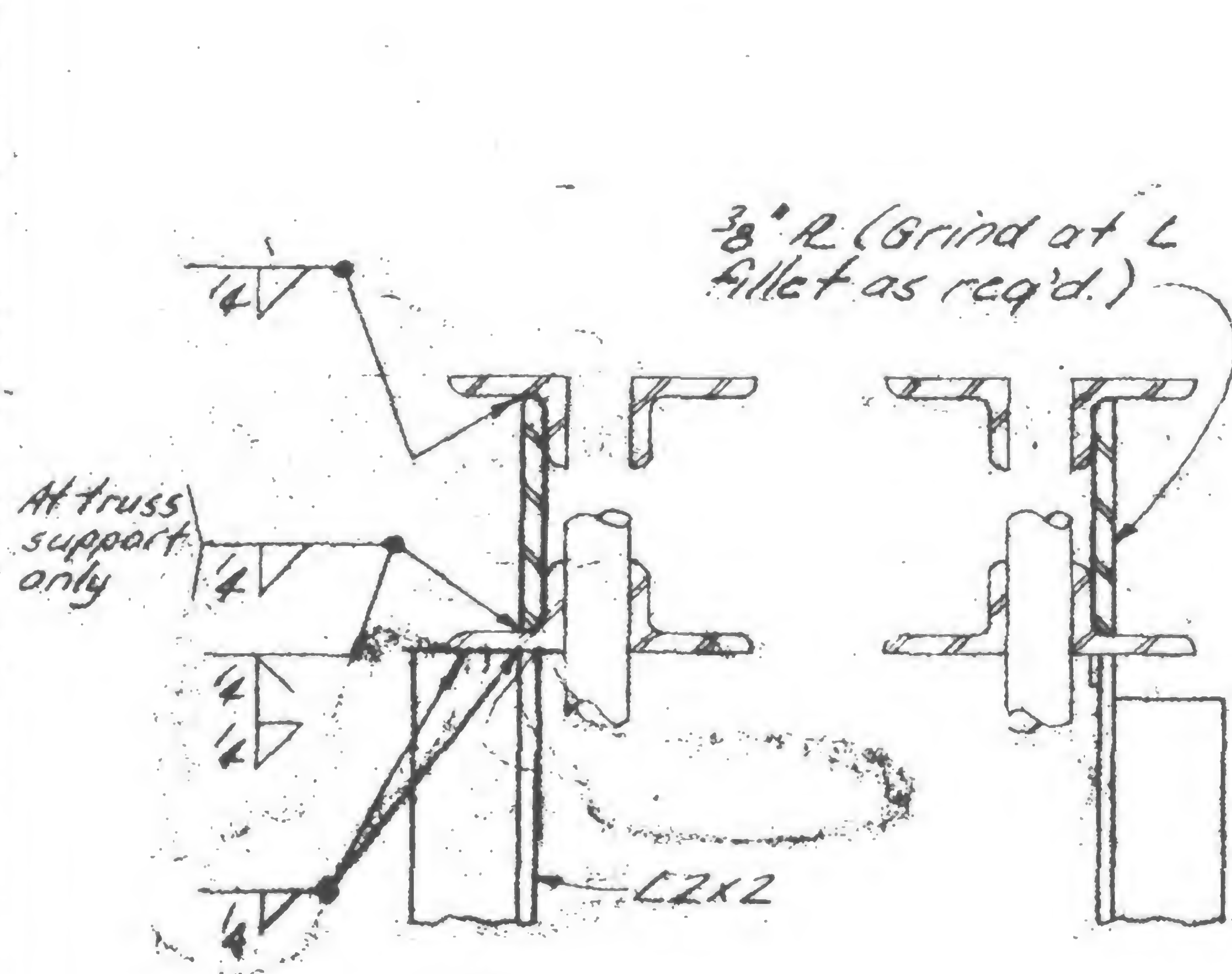
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

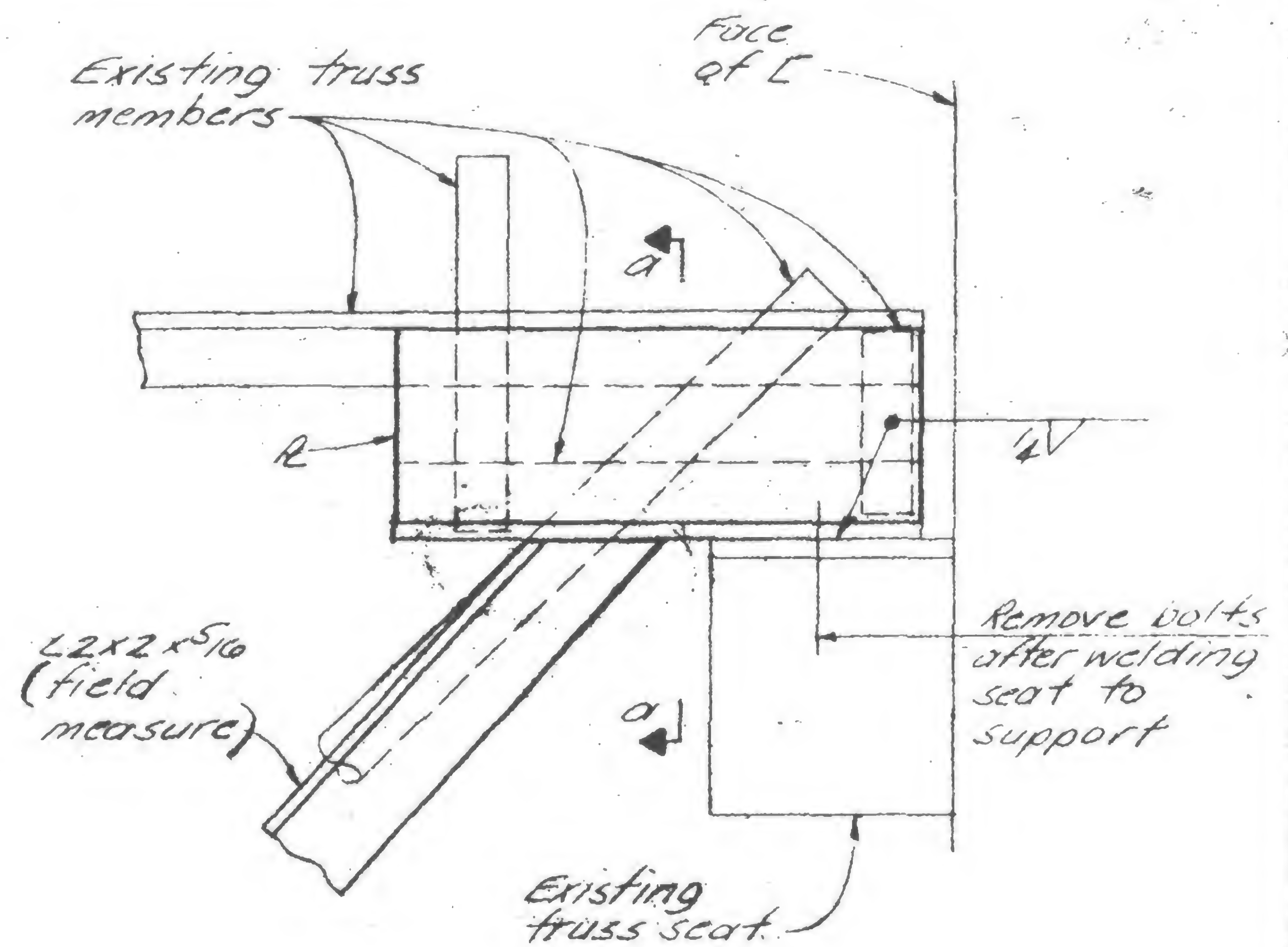
TITLE TRUSS DETAILS - FL 106

DATE 5-9-79

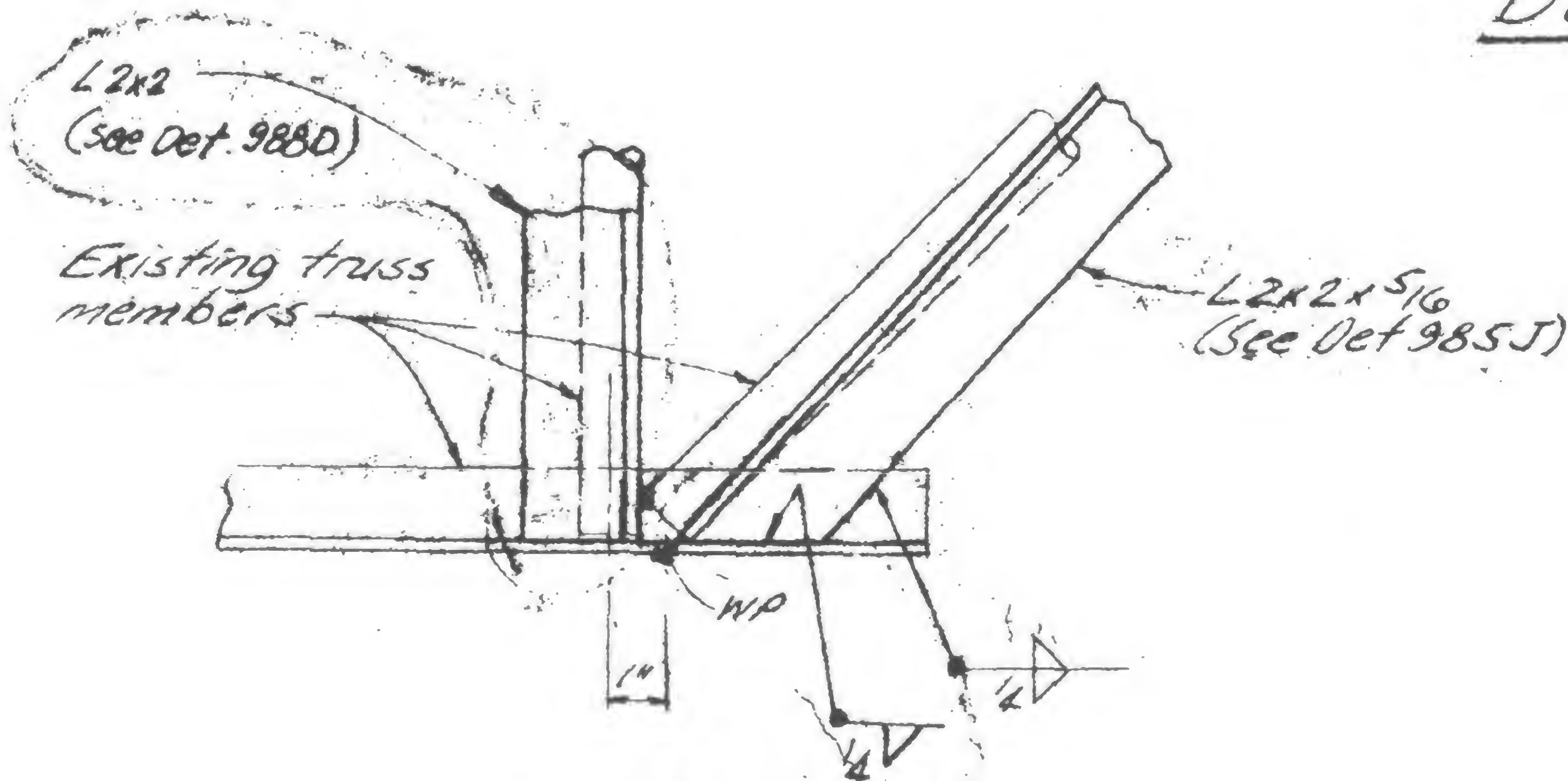
VISIONS



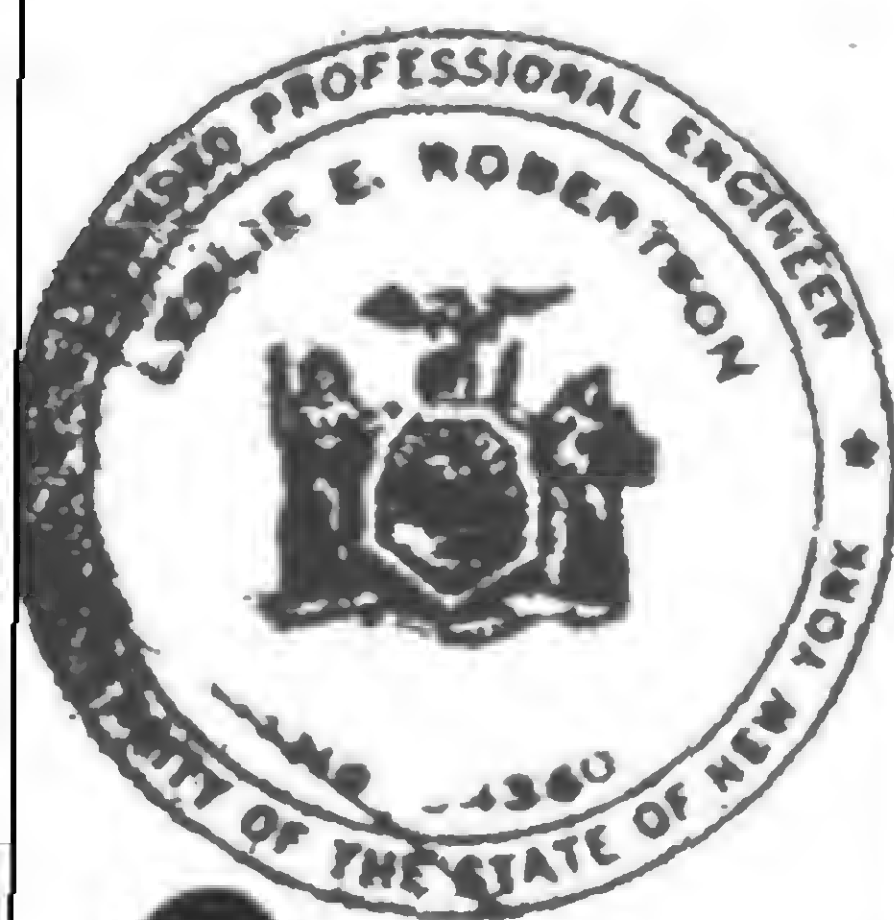
Section a-a



Detail 985J



Detail 985K



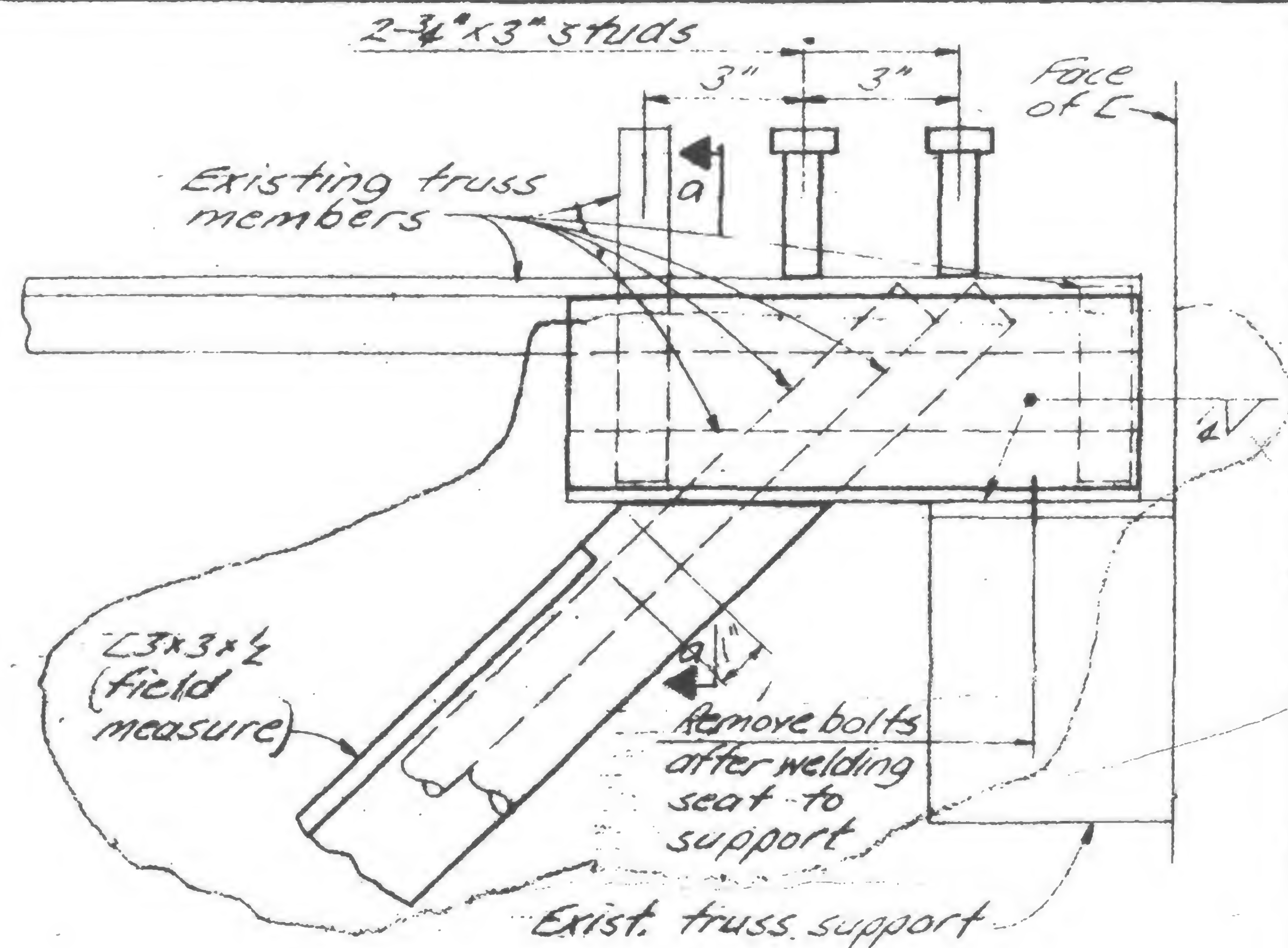
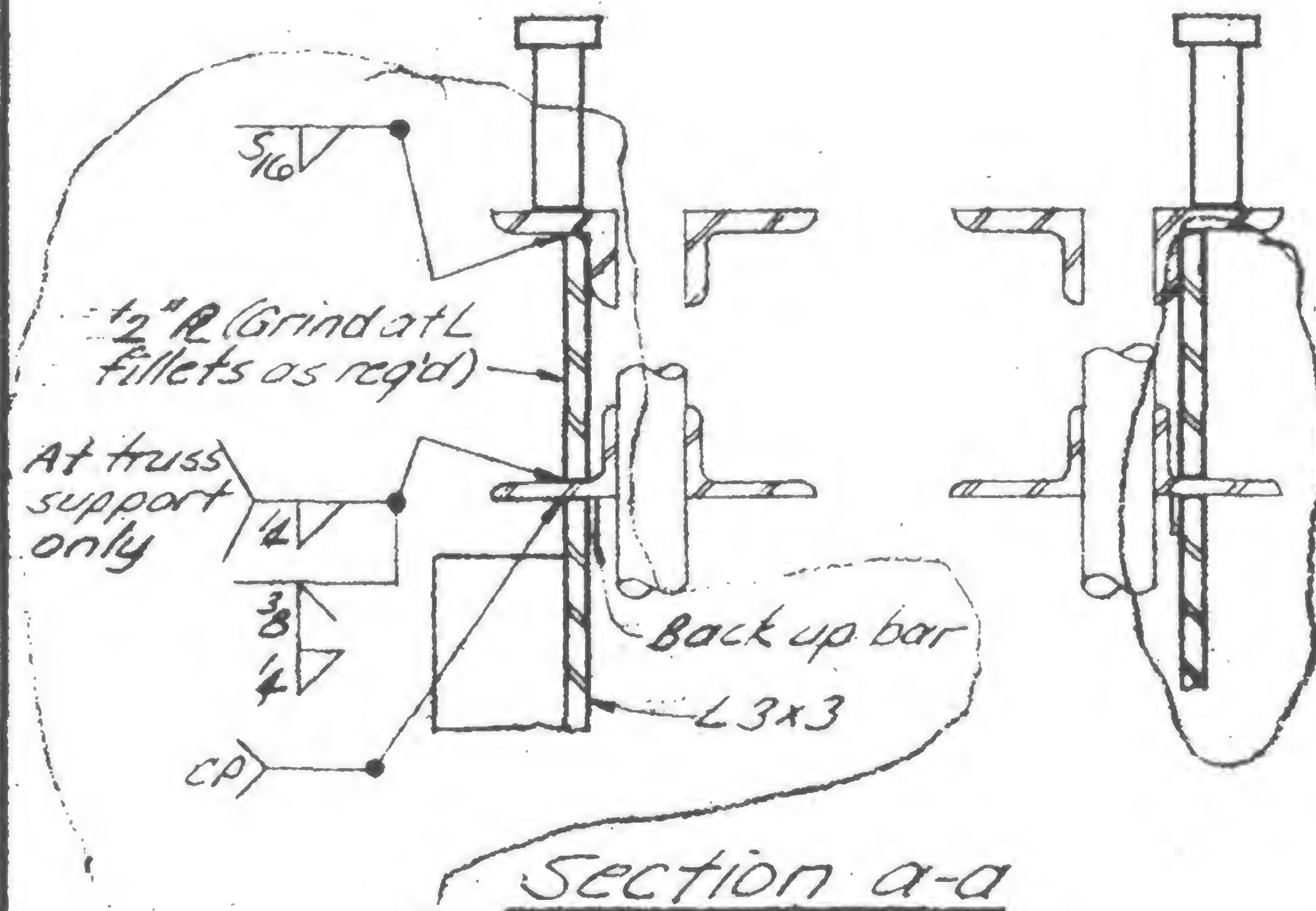
WAB

19-A-985.5



PROJECT THE WORLD TRADE CENTERTITLE TRUSS DETAILS - FL 106DATE 1-7-71

## REVISIONS

1/21/717/30/7110/6/715/9/79

DESIGNED

DRAWN

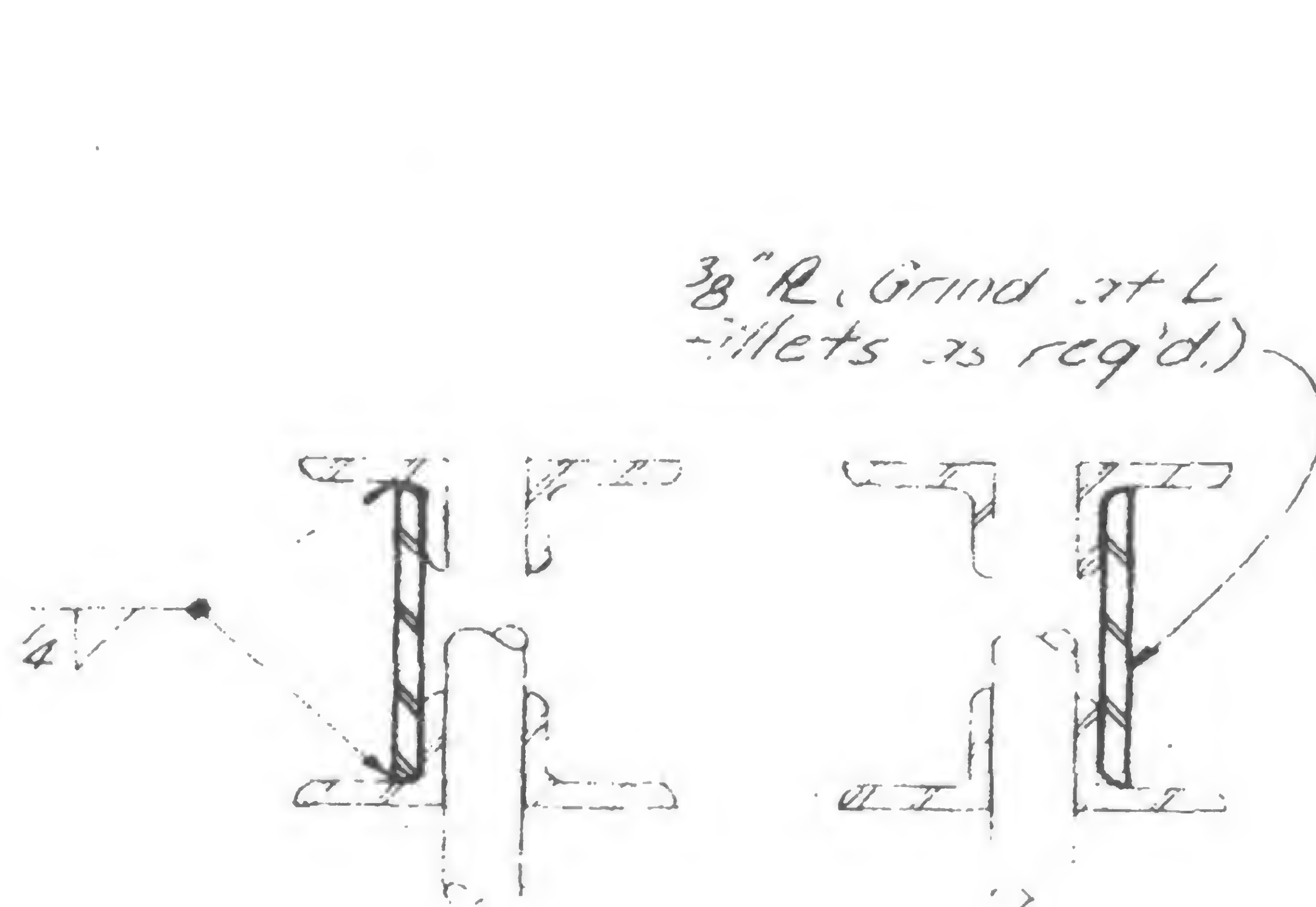
REVIEWED

WAB

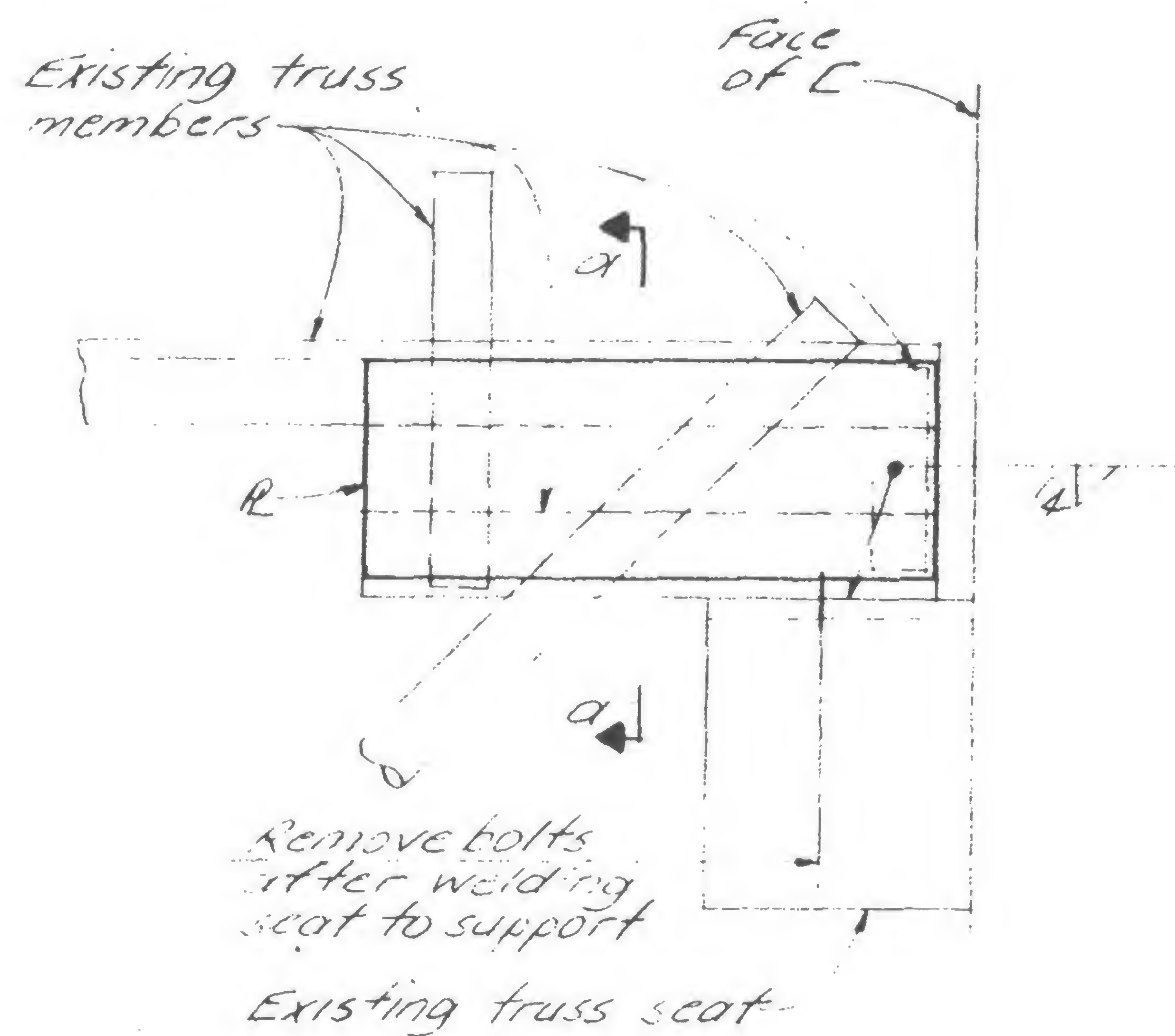
19-A-3856



REVISIONS



Section a-a



Detail 985N





SKILLING, HELLER, CHRISTIANSEN, ROBERTSON

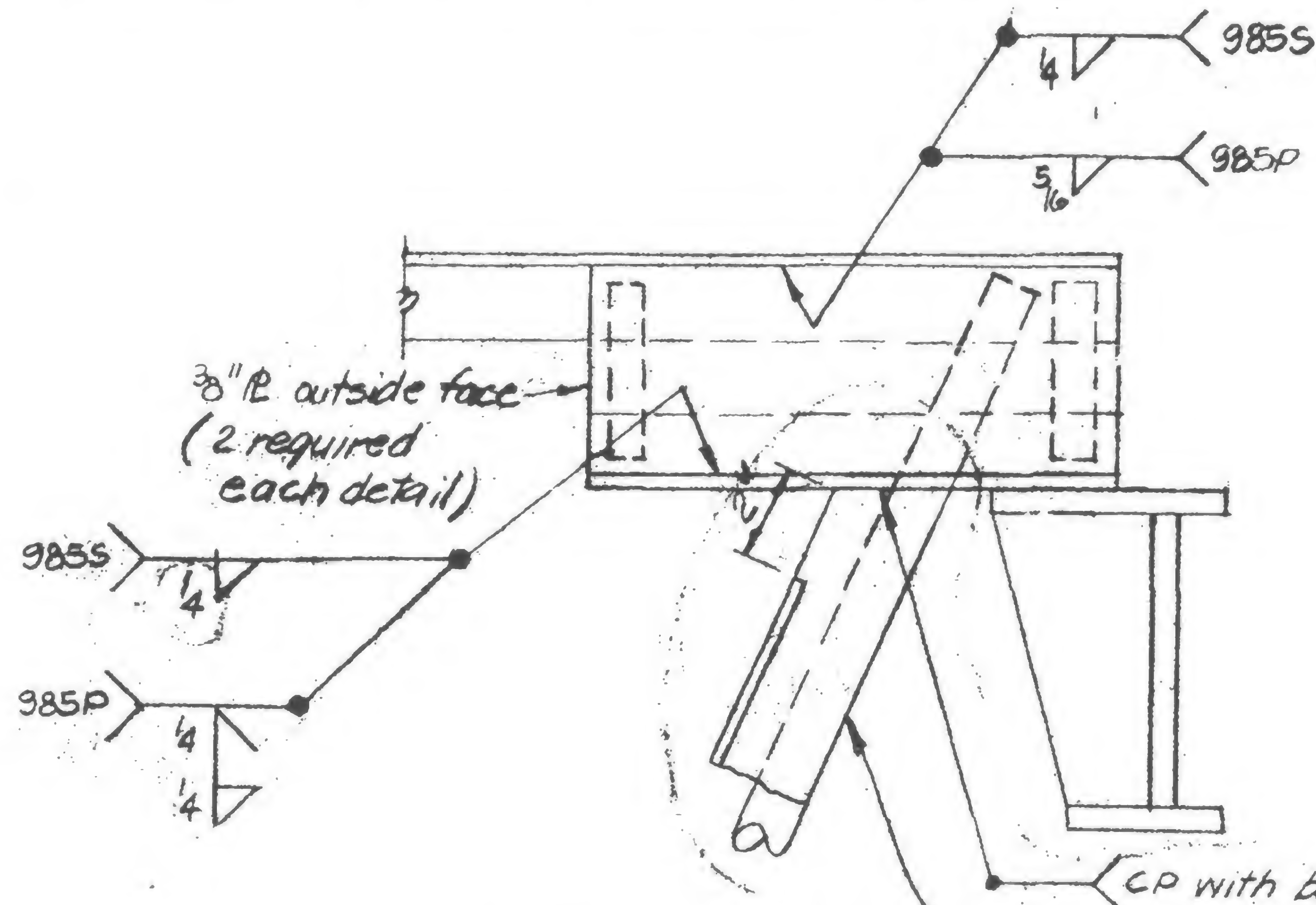
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS - FL. 106

DATE 5/9/79

REVISIONS



DETAIL 985P  
DETAIL 985S as noted

L 2x2x3/8 985P only (outer face of each truss)  
Note: align with 3/8" R above



DESIGNED

DRAWN

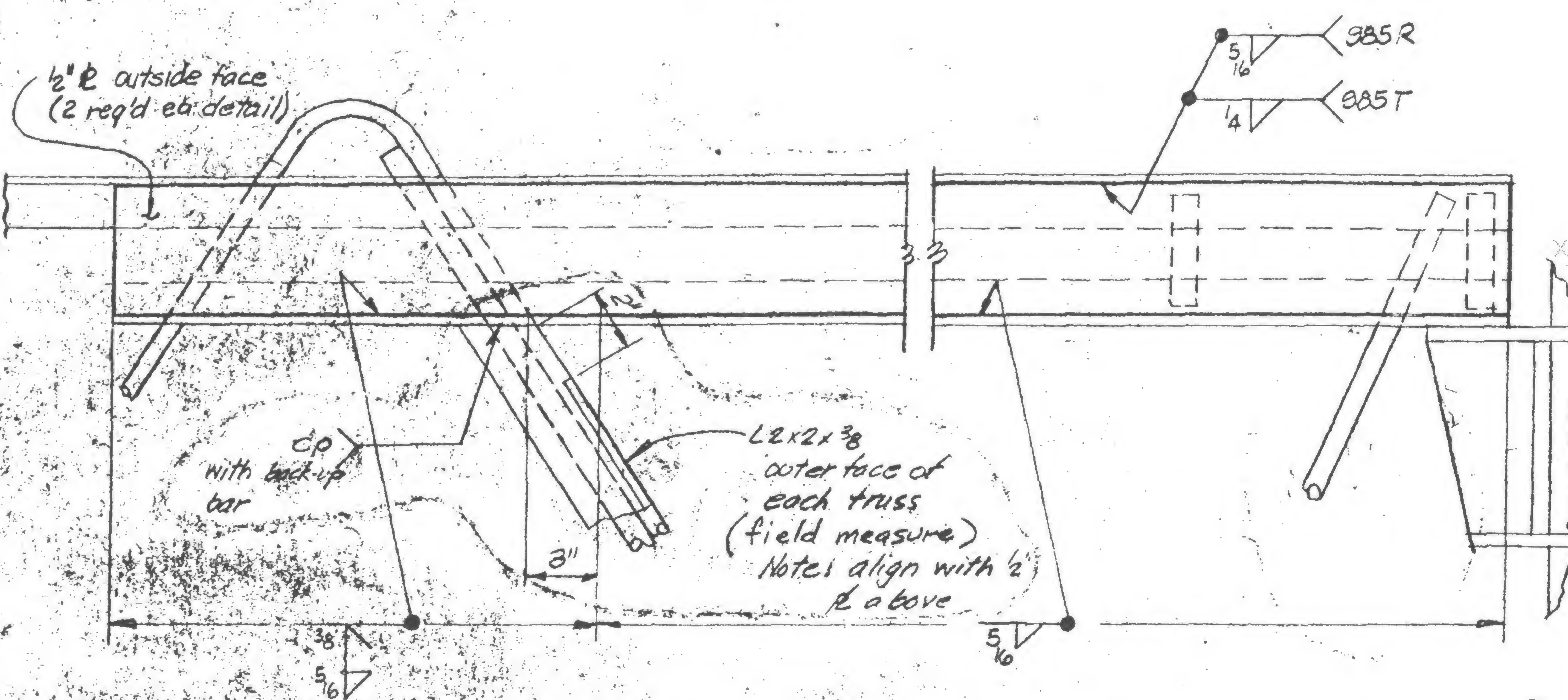
PORCHER

W.E.R.

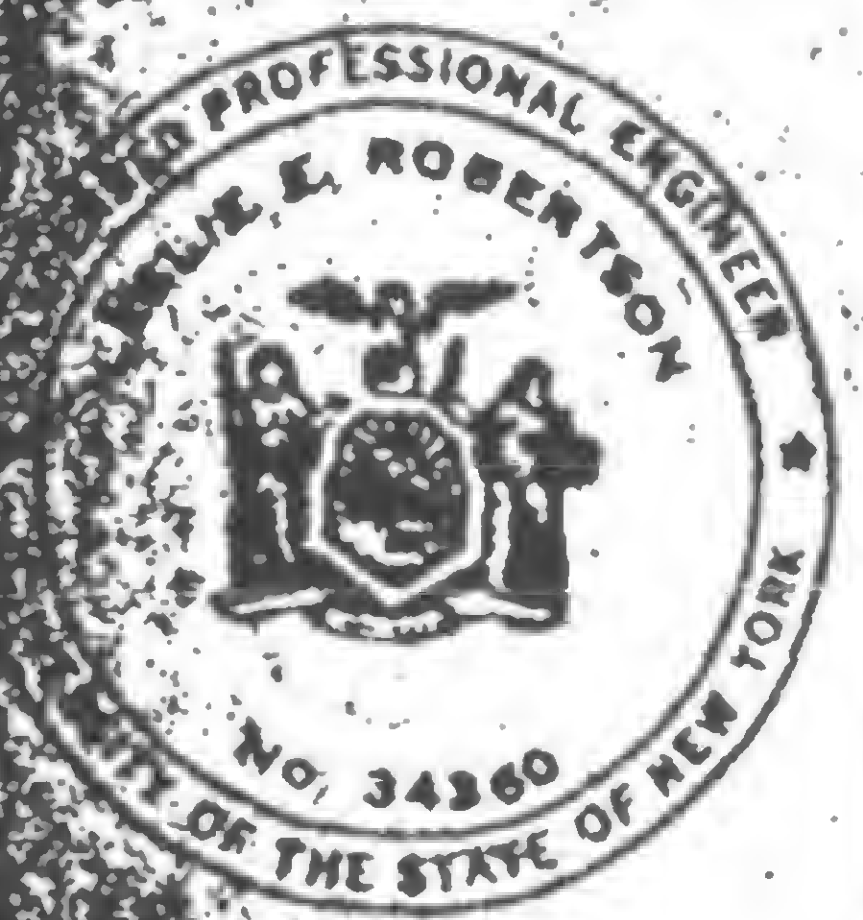
19-A-985.8



REVISIONS



DETAIL 985 R+T



DESIGNED  
DRAWN  
P. Ocker  
REVIEWED  
WAB







PROJECT

THE WORLD TRADE CENTER

TITLE

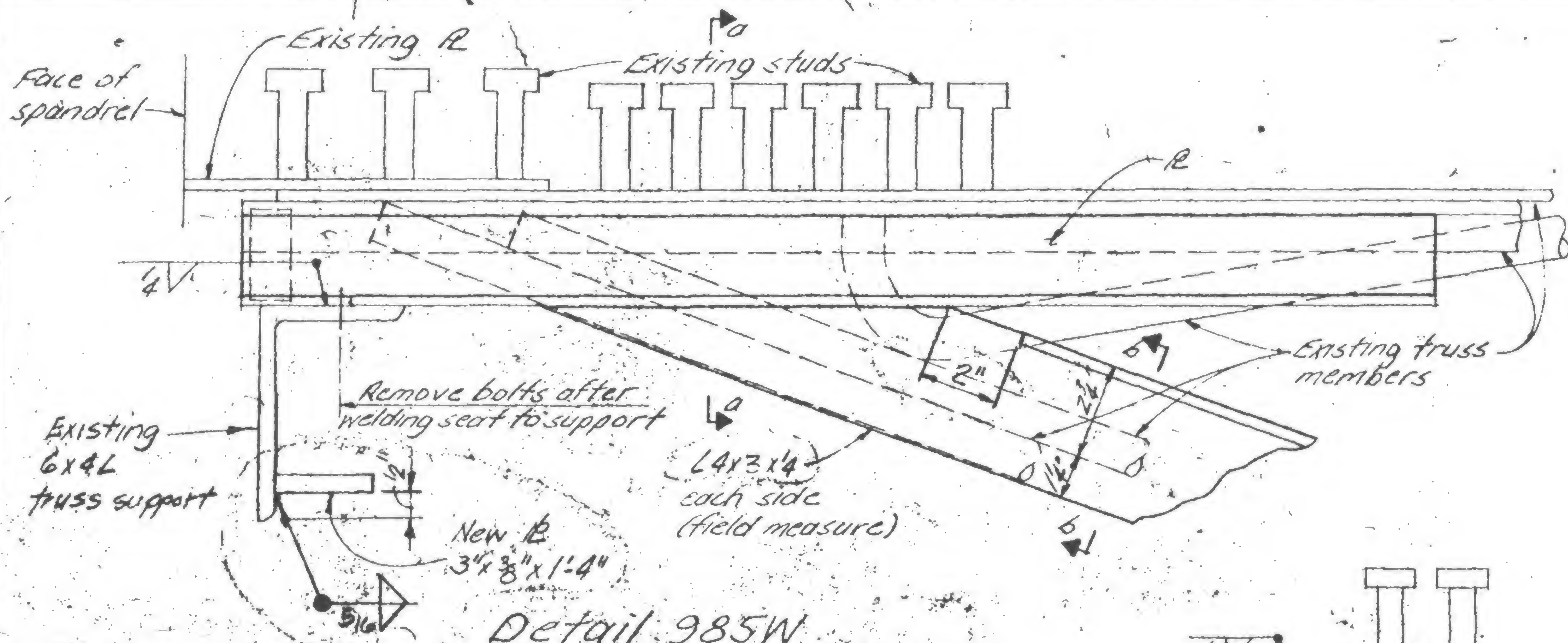
TRUSS DETAILS - FL 106

DATE

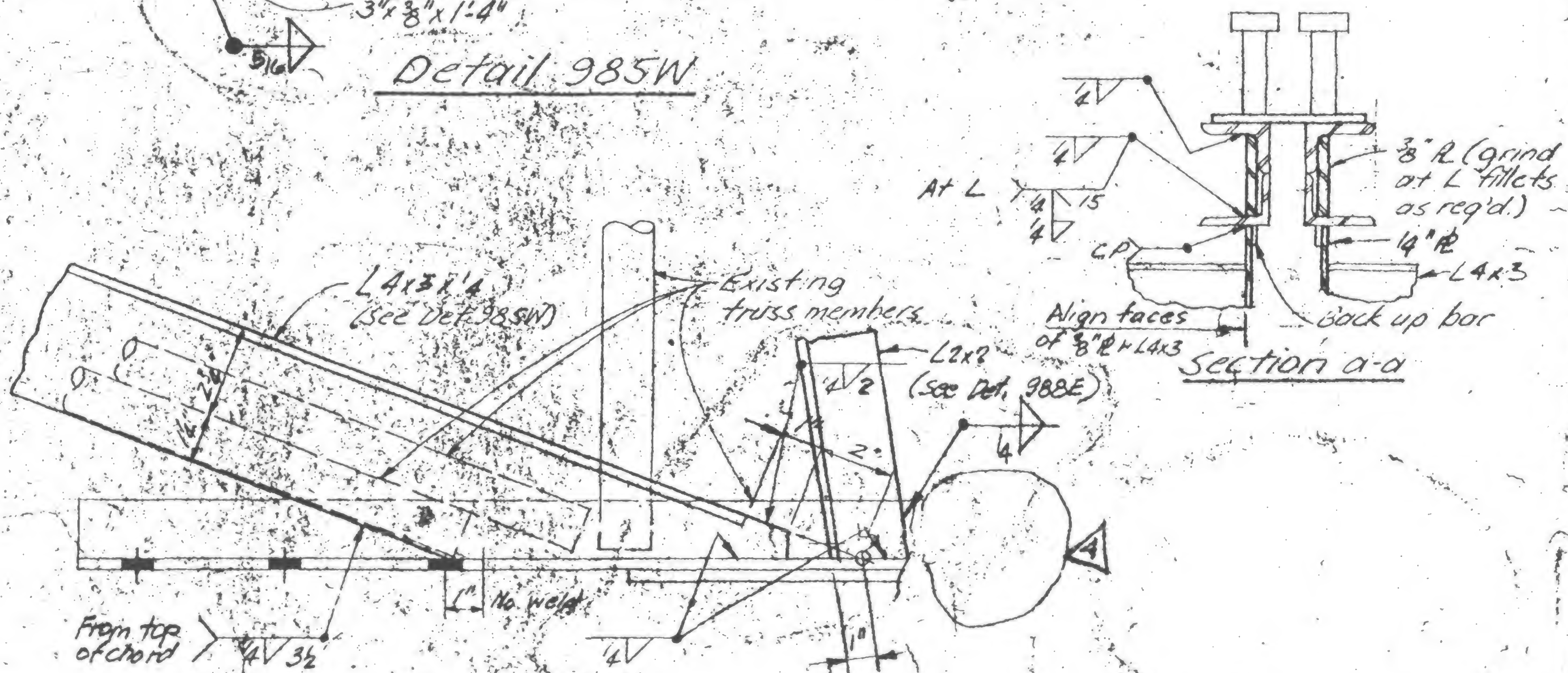
5/9/79

VISIONS

11.30.79

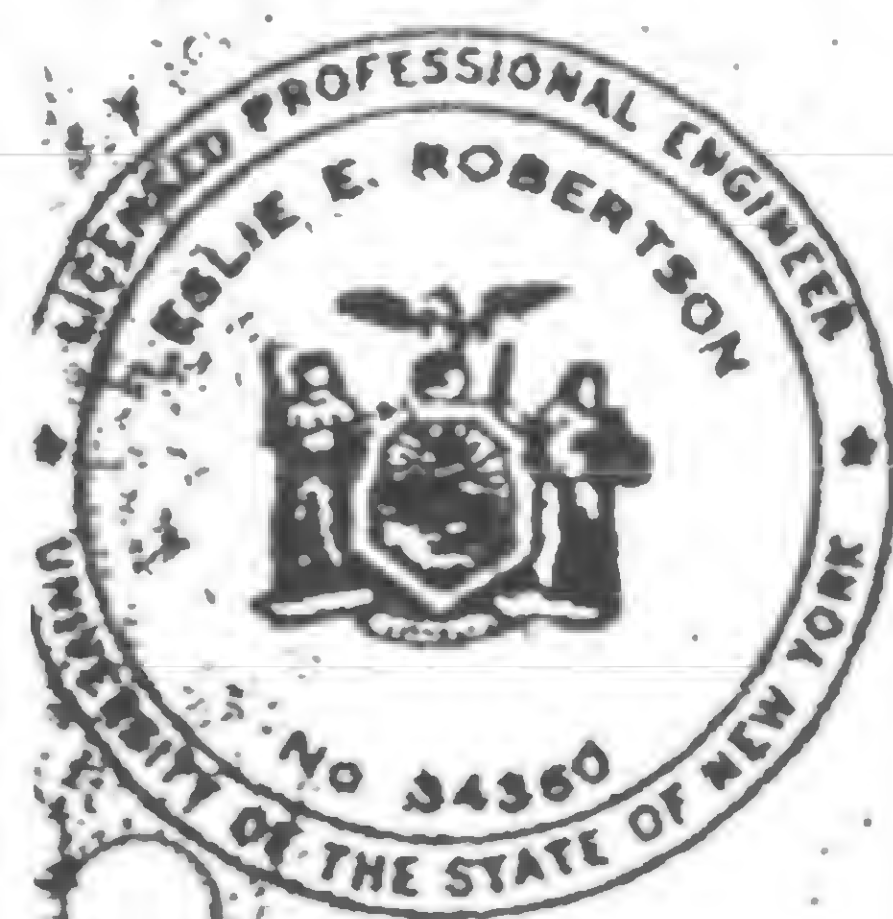


Detail 985W



Detail 985V

Section a-a



DESIGNED

OWN

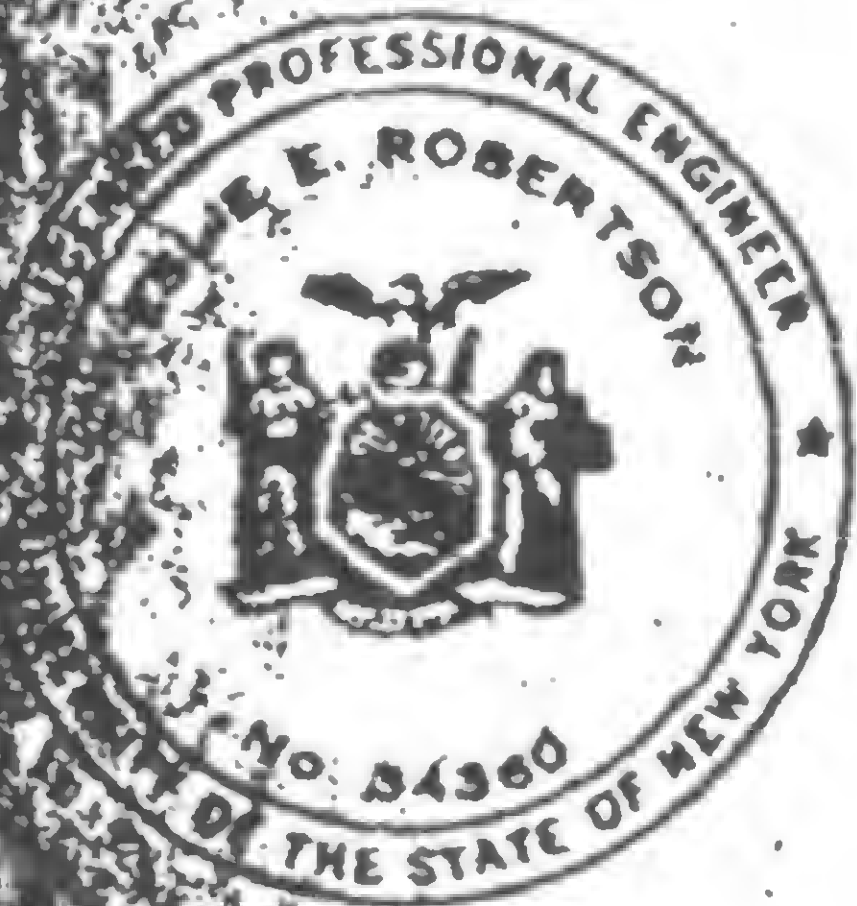
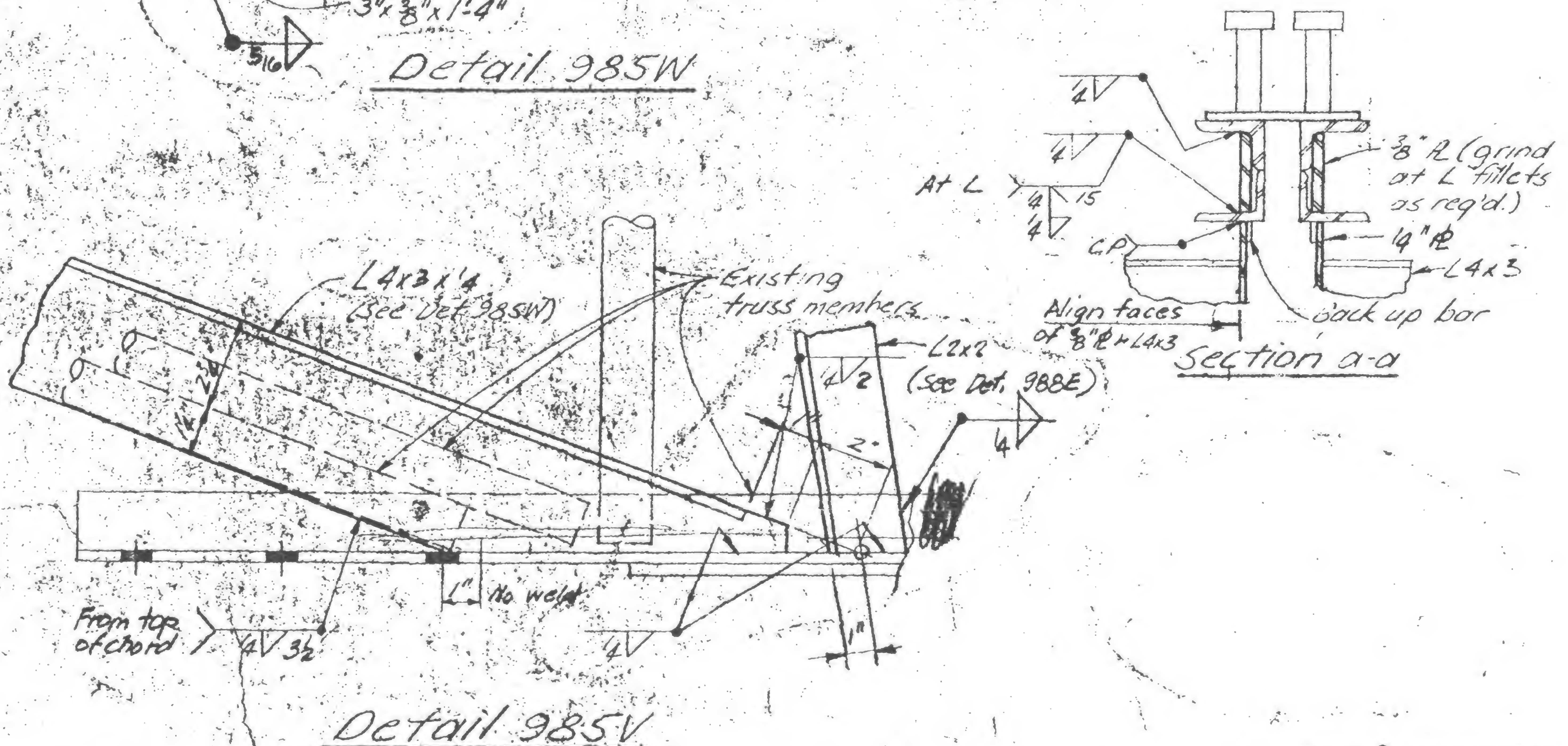
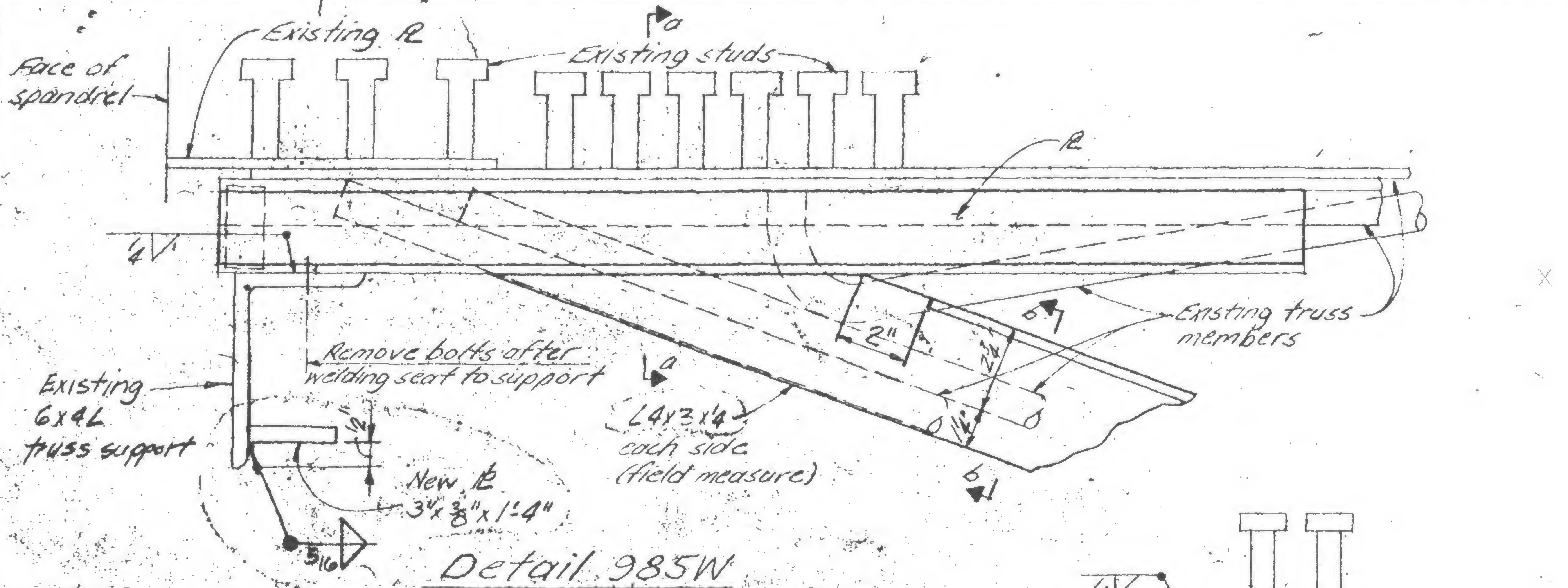
REVIEWED

WRB

19-A-985.10



REVISIONS



DESIGNED

DRAWN

CHECKED

WTCB



PROJECT

THE WORLD TRADE CENTER

TITLE

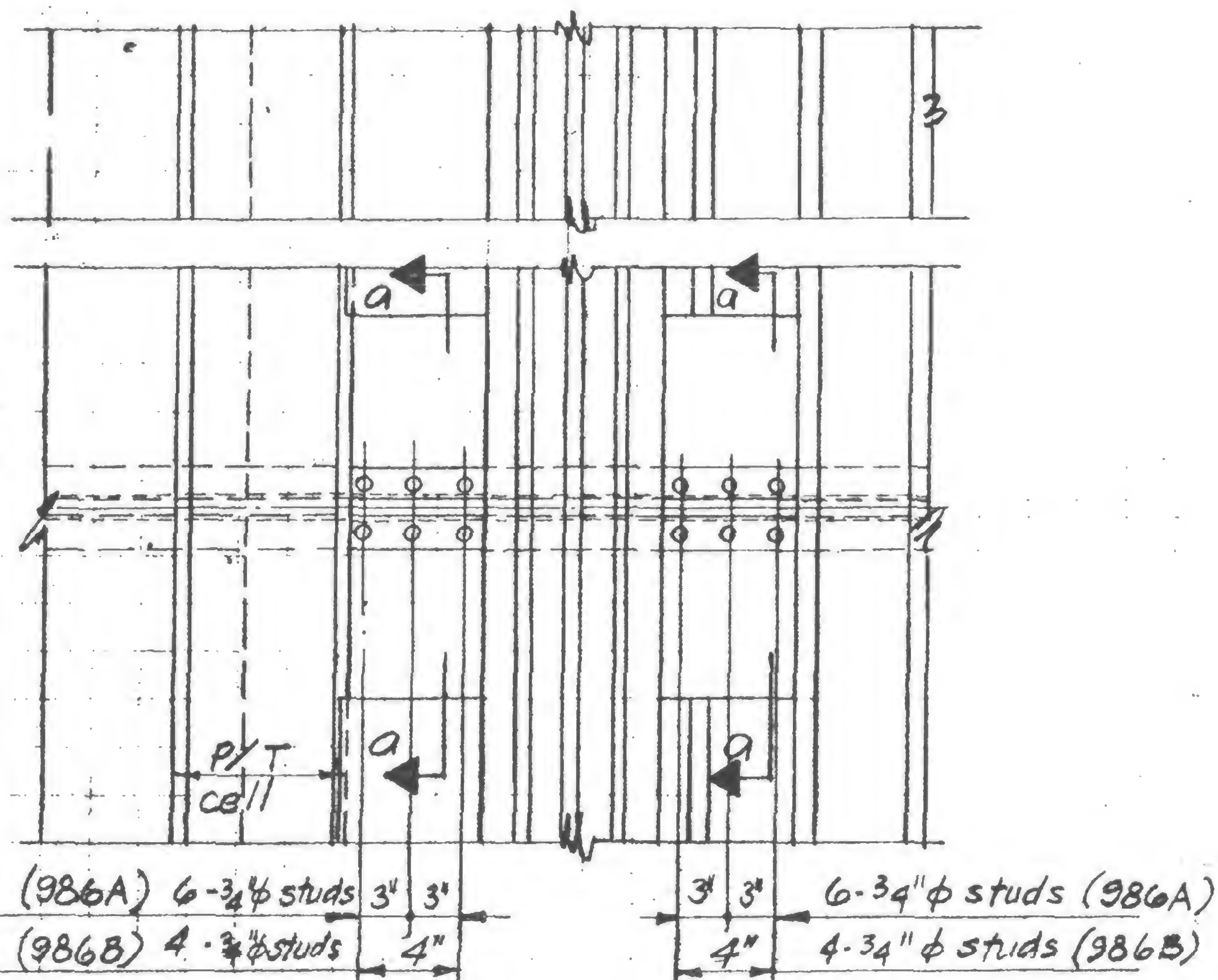
FL. 106 - Stud Details

DATE

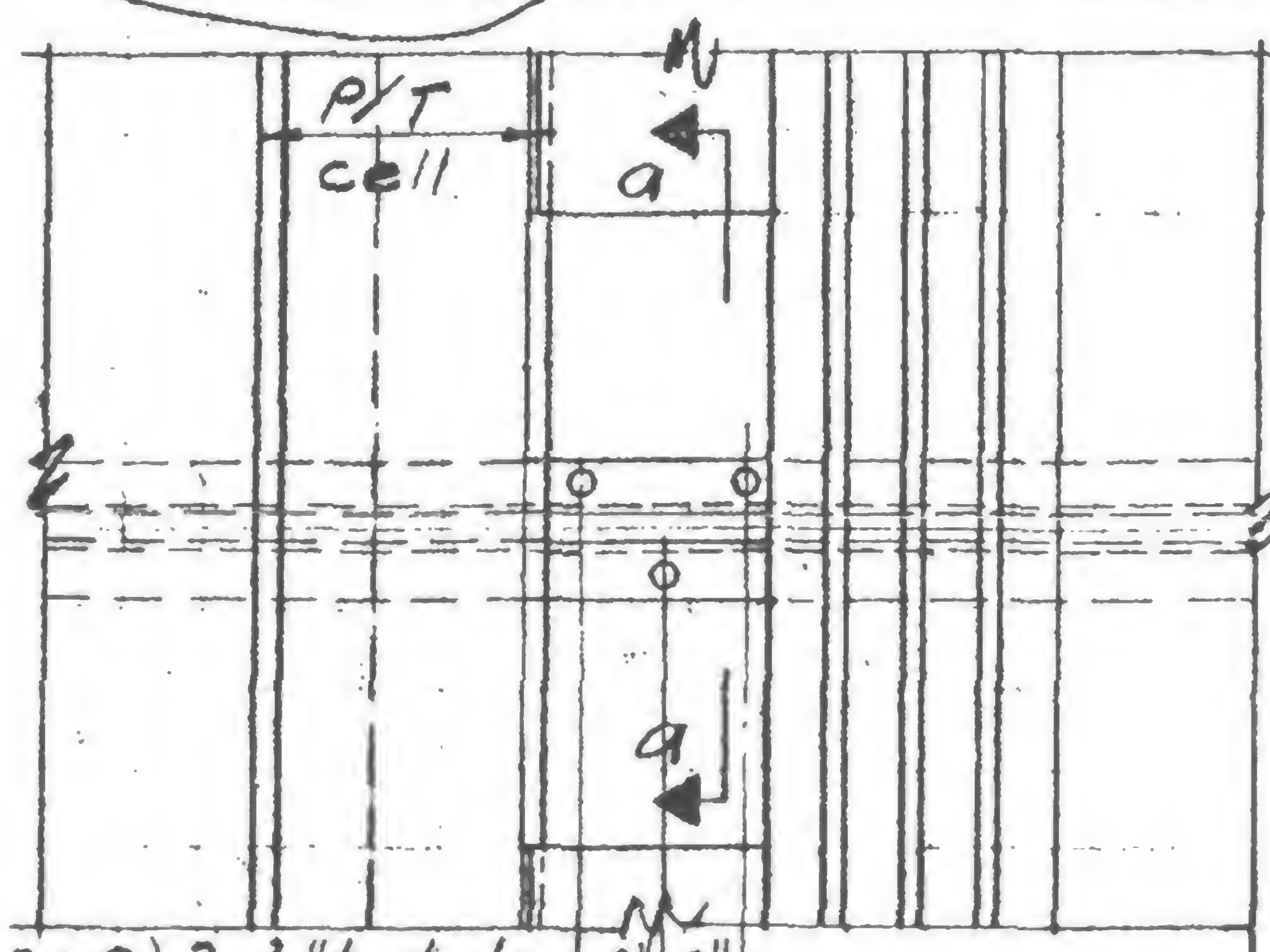
1-7-71

REVISIONS

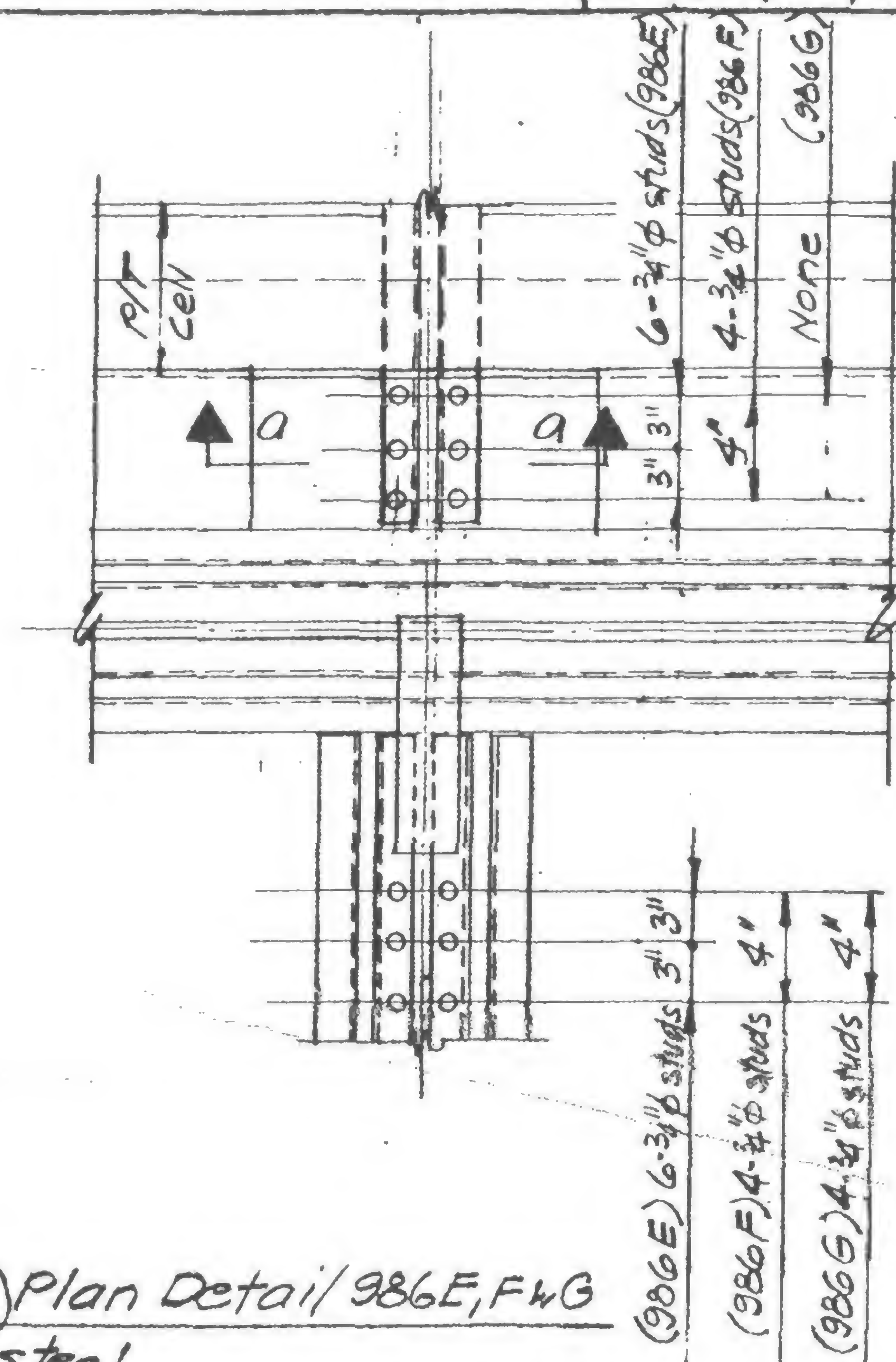
5/9/79



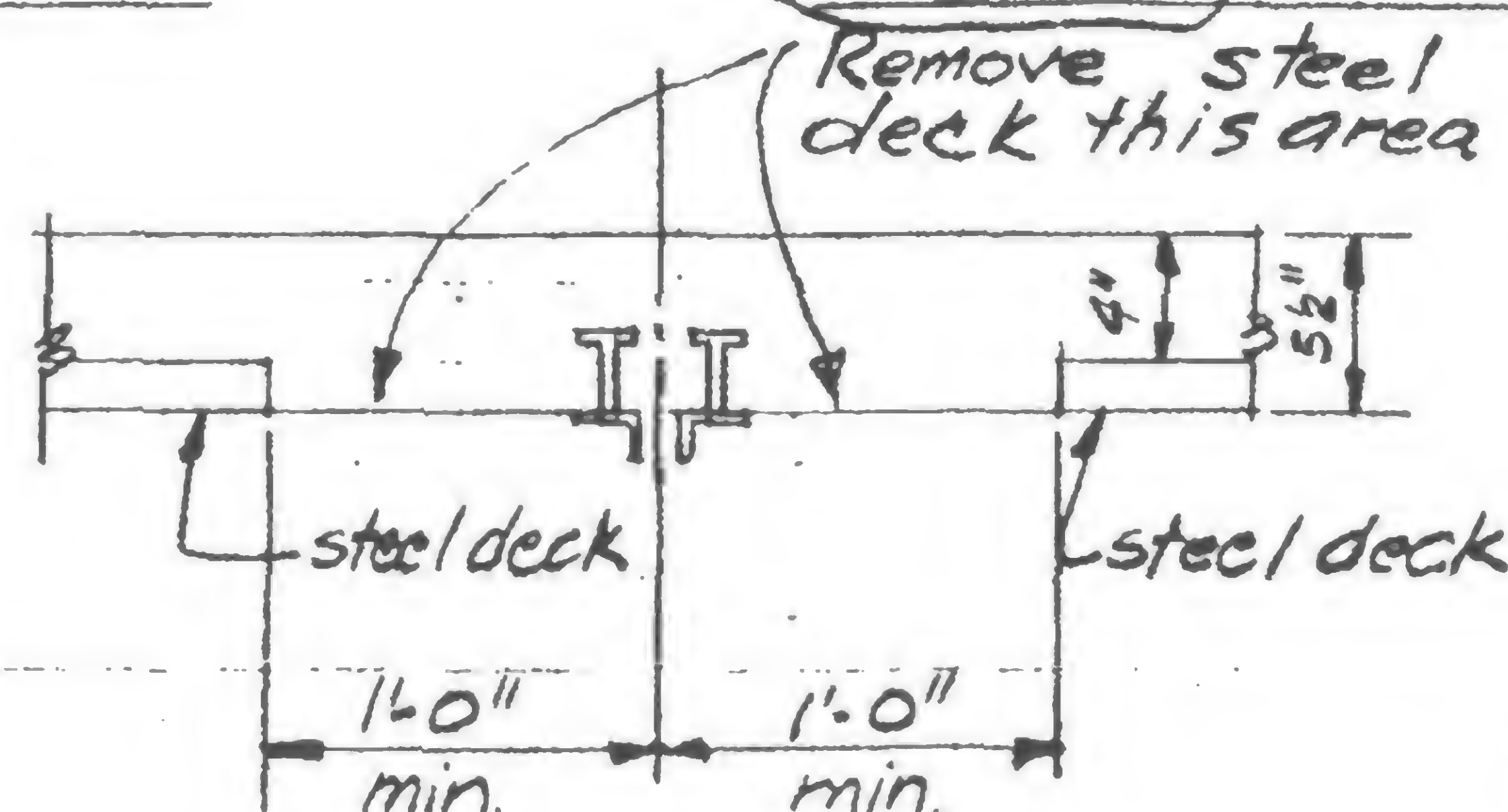
Existing Plan Detail 986A &amp; B



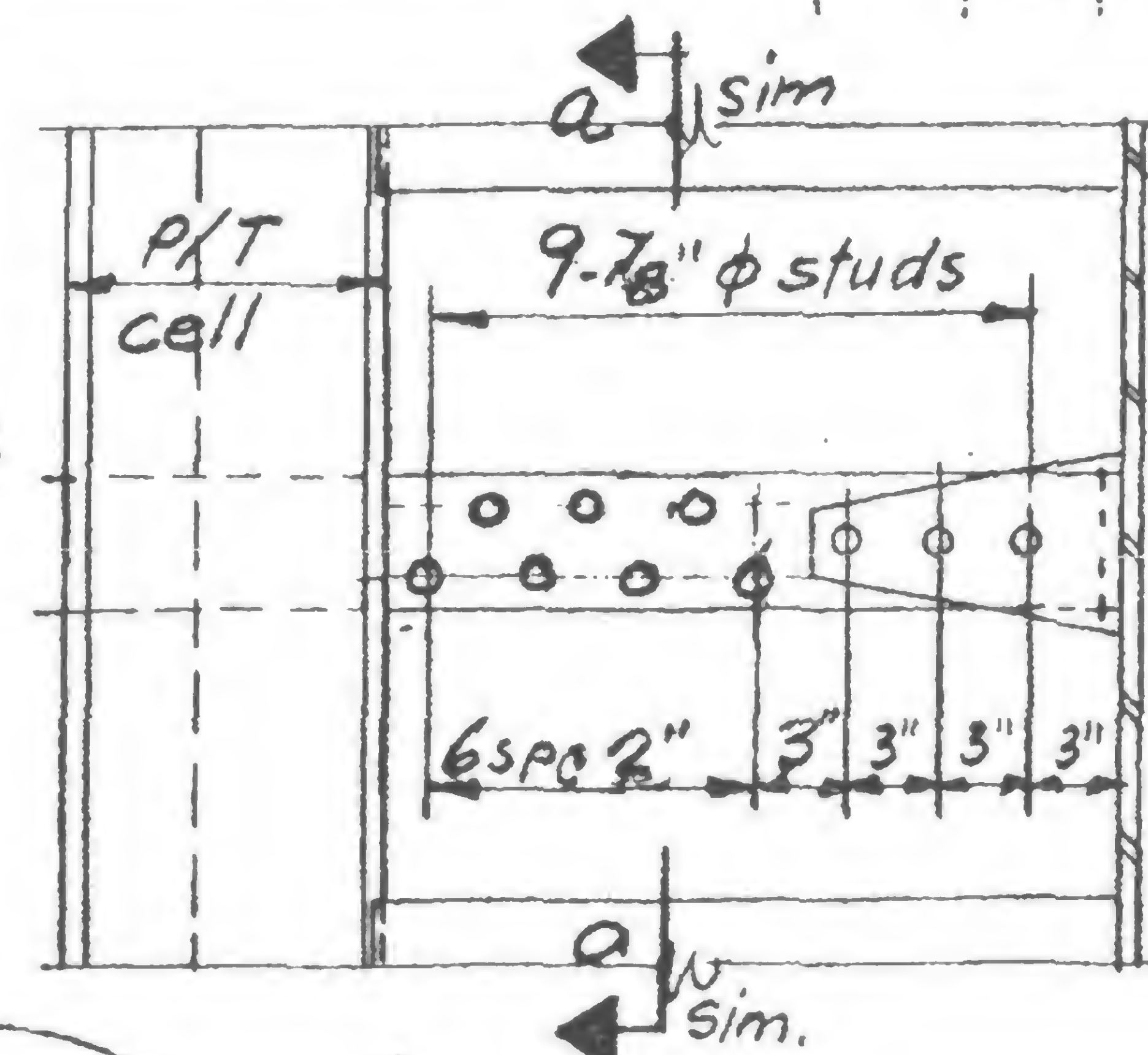
Existing Plan Detail C &amp; D



Existing Plan Detail 986E, F &amp; G



Section a-a



Existing Plan Detail 986H

19-A-986

DESIGNED  
WABDRAWN  
Rohr

REVIEWED

WAB



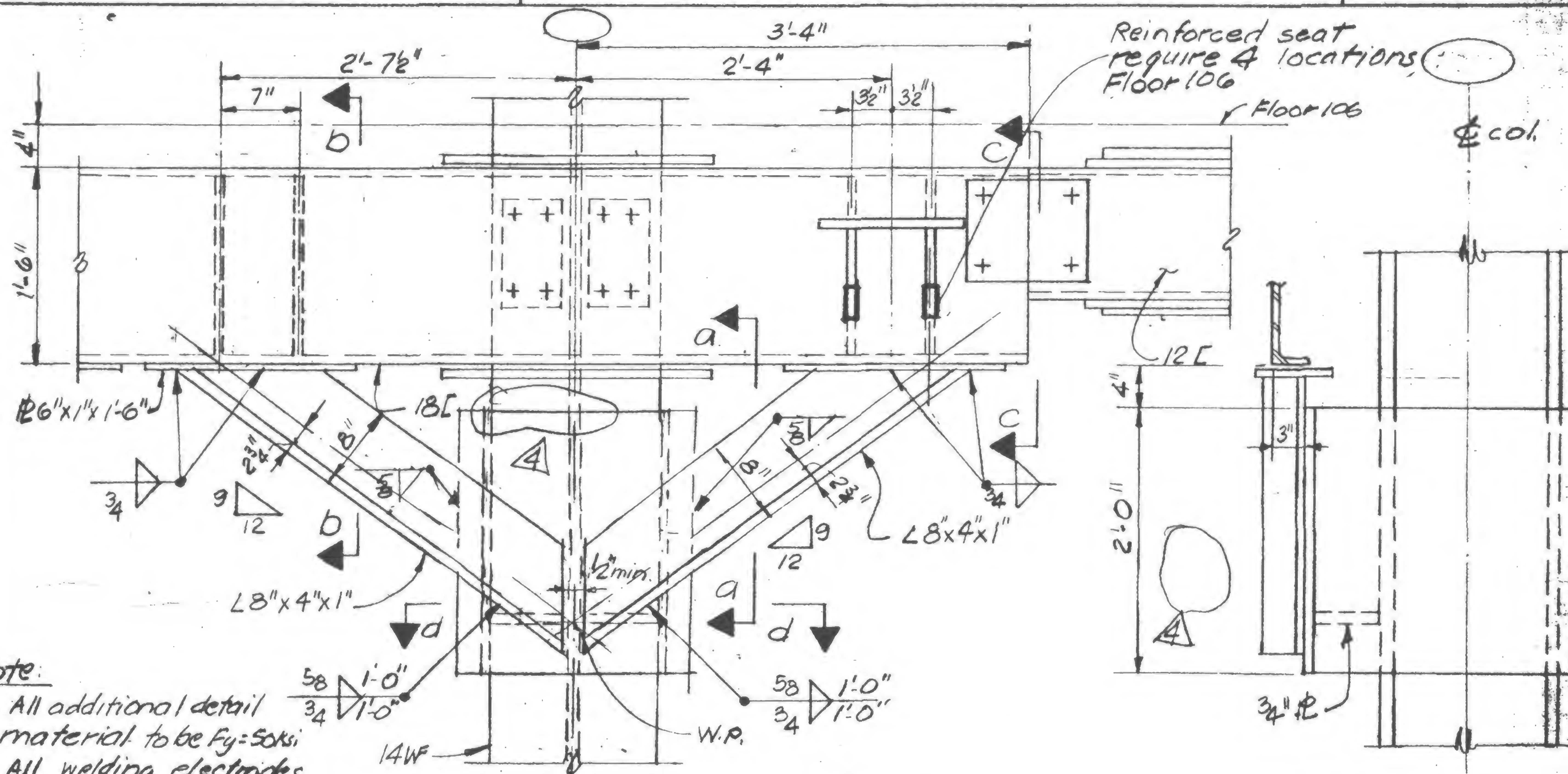
PROJECT THE WORLD TRADE CENTER

TITLE FL.106 CONNECTION DETAILS

DATE 1-7-71

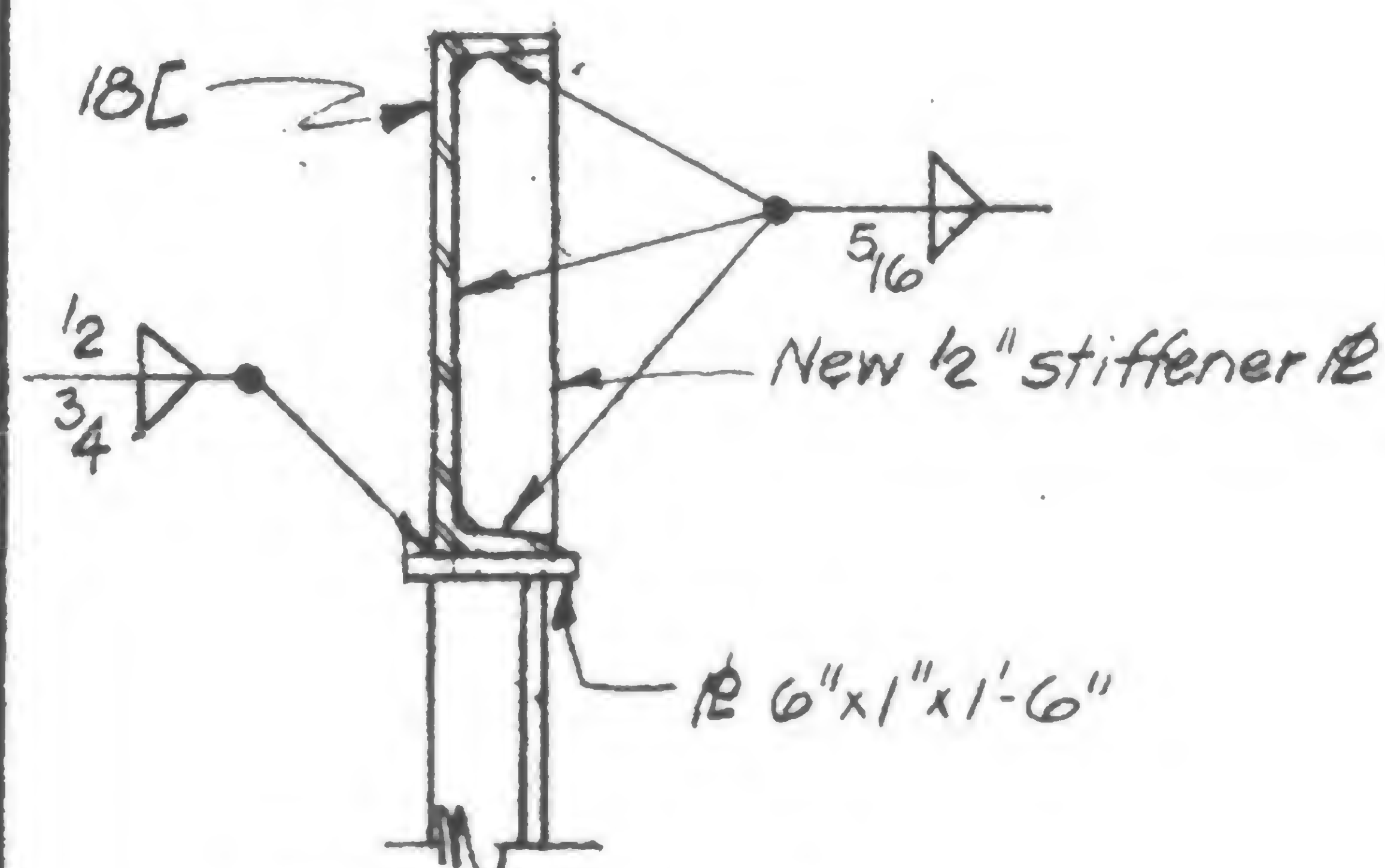
## REVISIONS

1/27/71  
 7/15/71  
 10/6/71  
 5/9/79  
 11/30/79 A

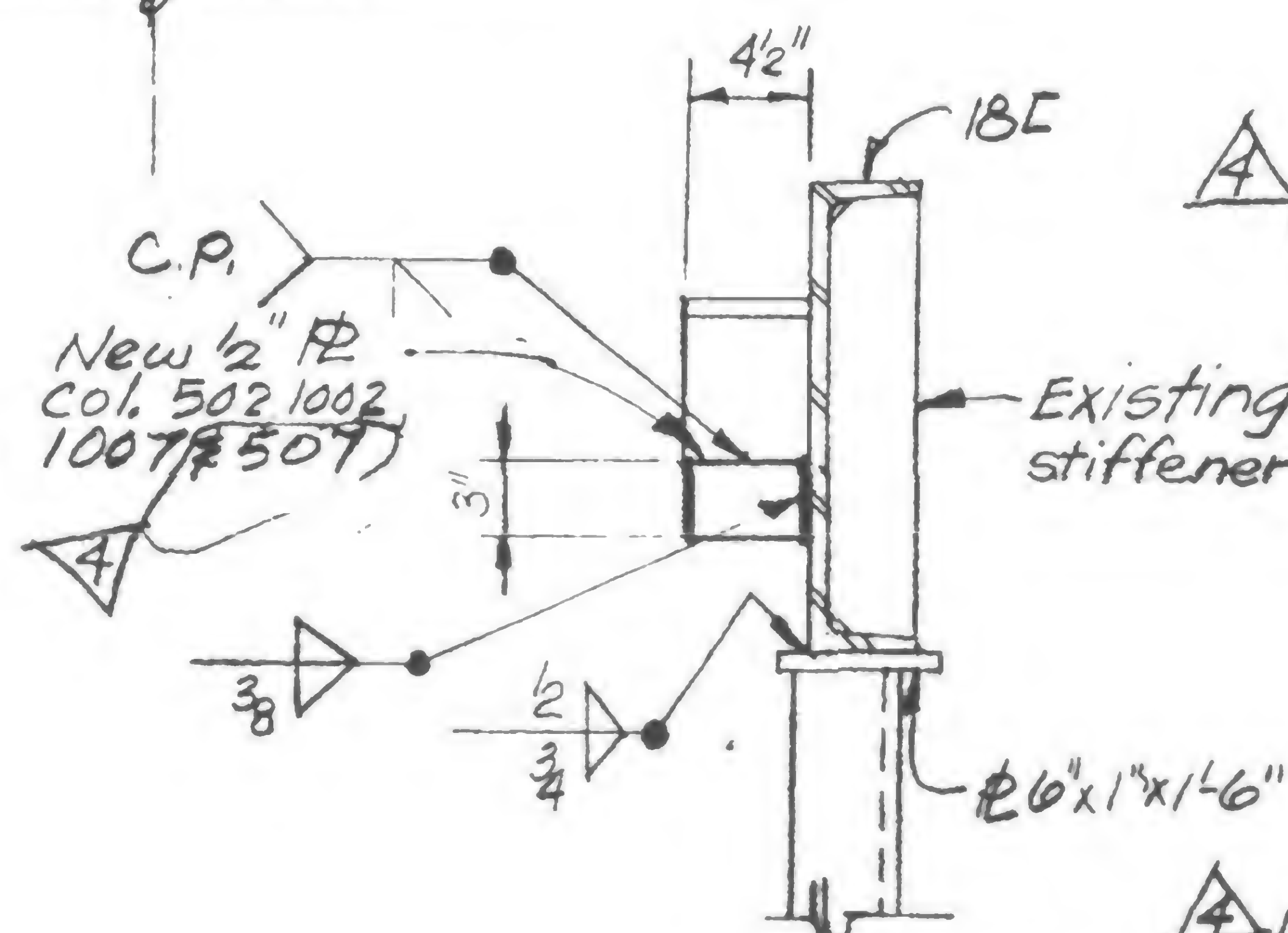


## Note:

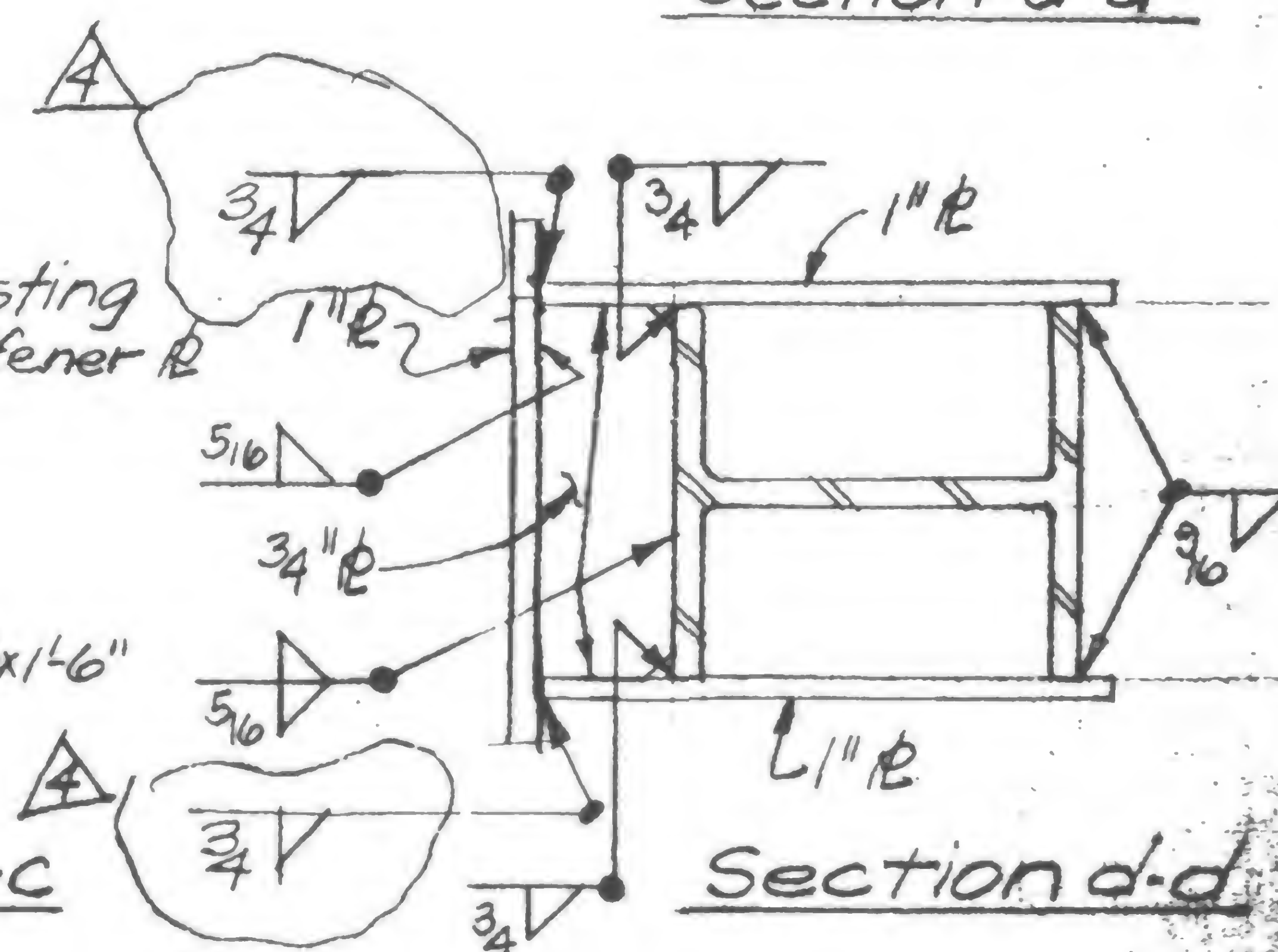
1. All additional detail material to be  $F_y = 50ksi$ .
2. All welding electrodes to be E70xx.



Section b-b



Section c-c



Section d-d

## DETAIL 987A

@ col. 1002, as shown existing  
 @ col. 502 & 1007 similar existing @ Col. 507 sim. New

19-A-987.1



SIGNED

DRAWN

S.C.

W. Brewer




DATE 1-7-71

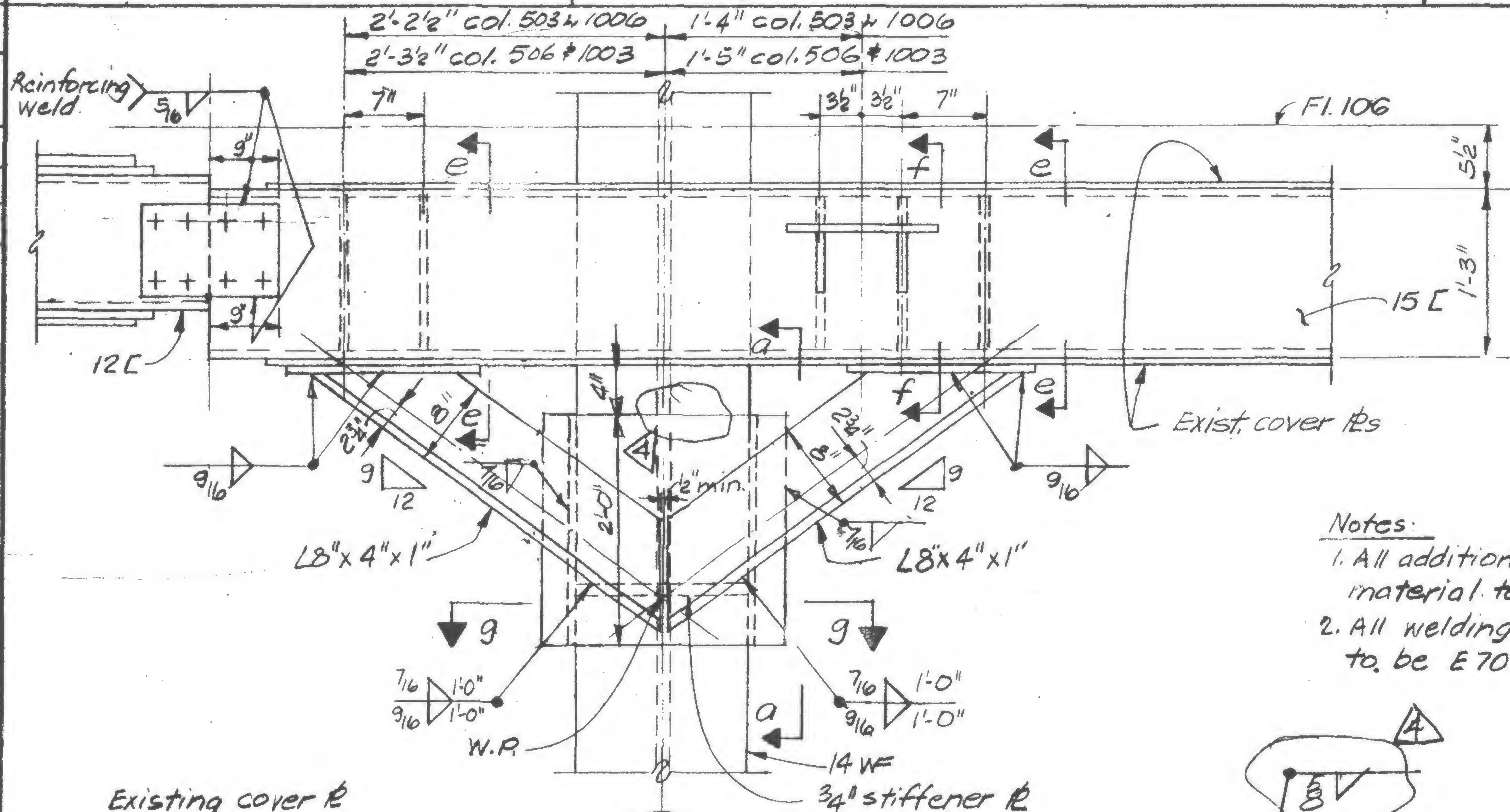
## REVISIONS

Printed  
7/30/71

10/6/71

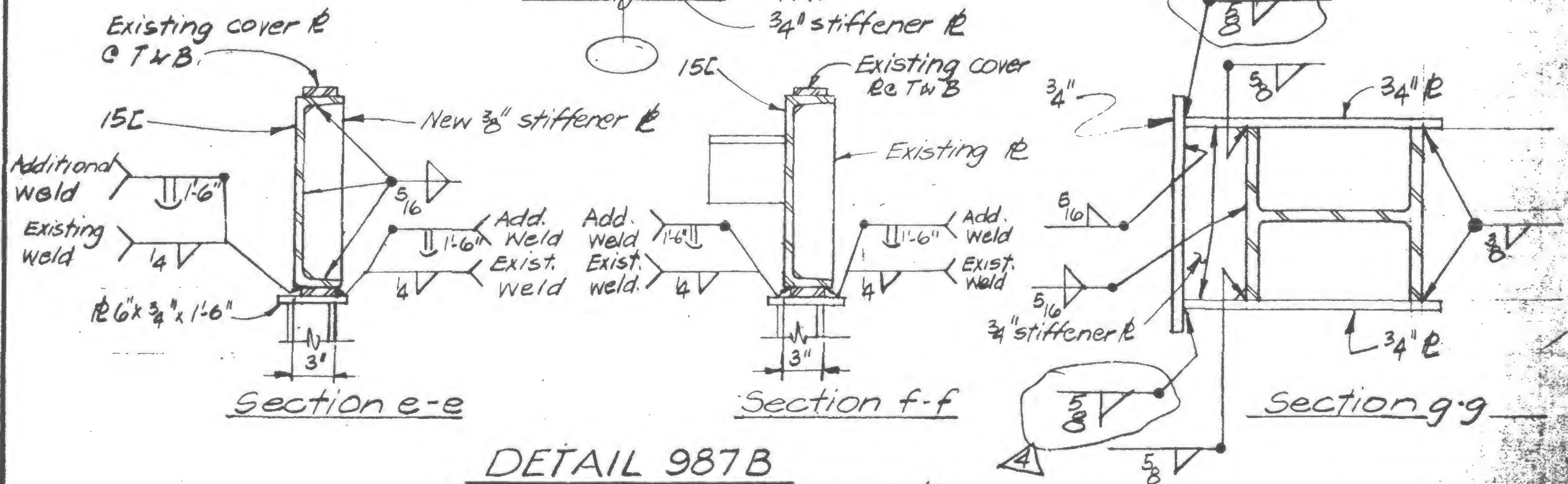
5/9/79

11-30-79 



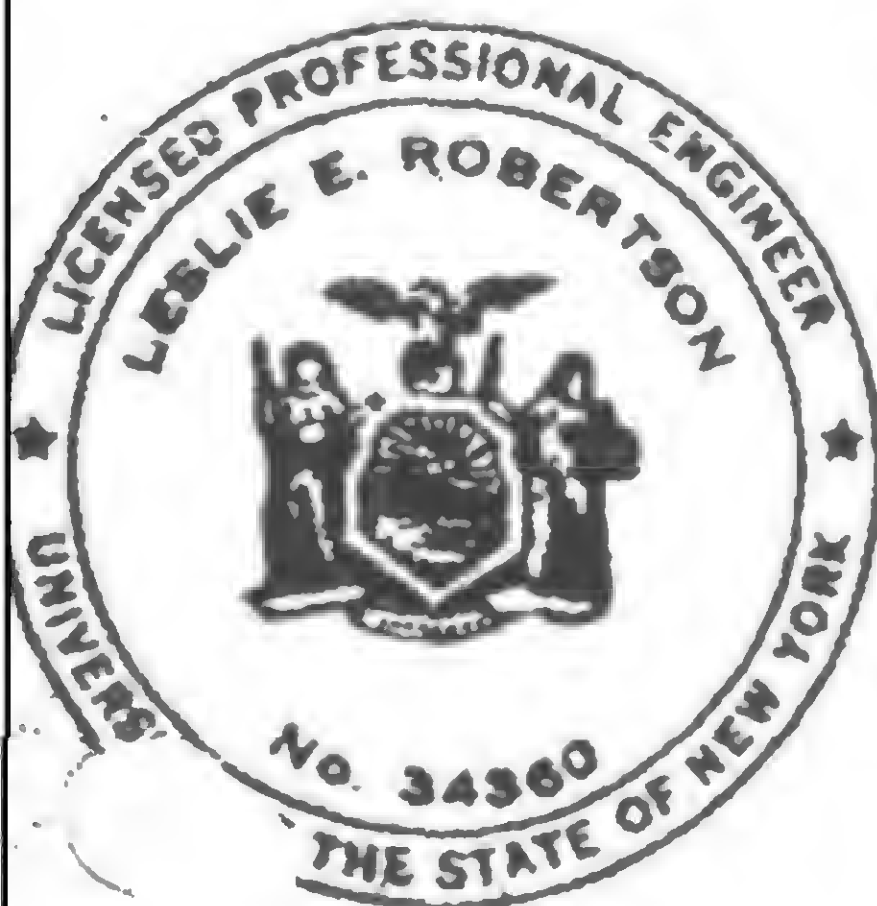
Notes:

1. All additional detail material to be  $F_y = 50 \text{ ksi}$
2. All welding electrodes to be E70xx.



DETAIL 987B

C col. 1003, as shown existing



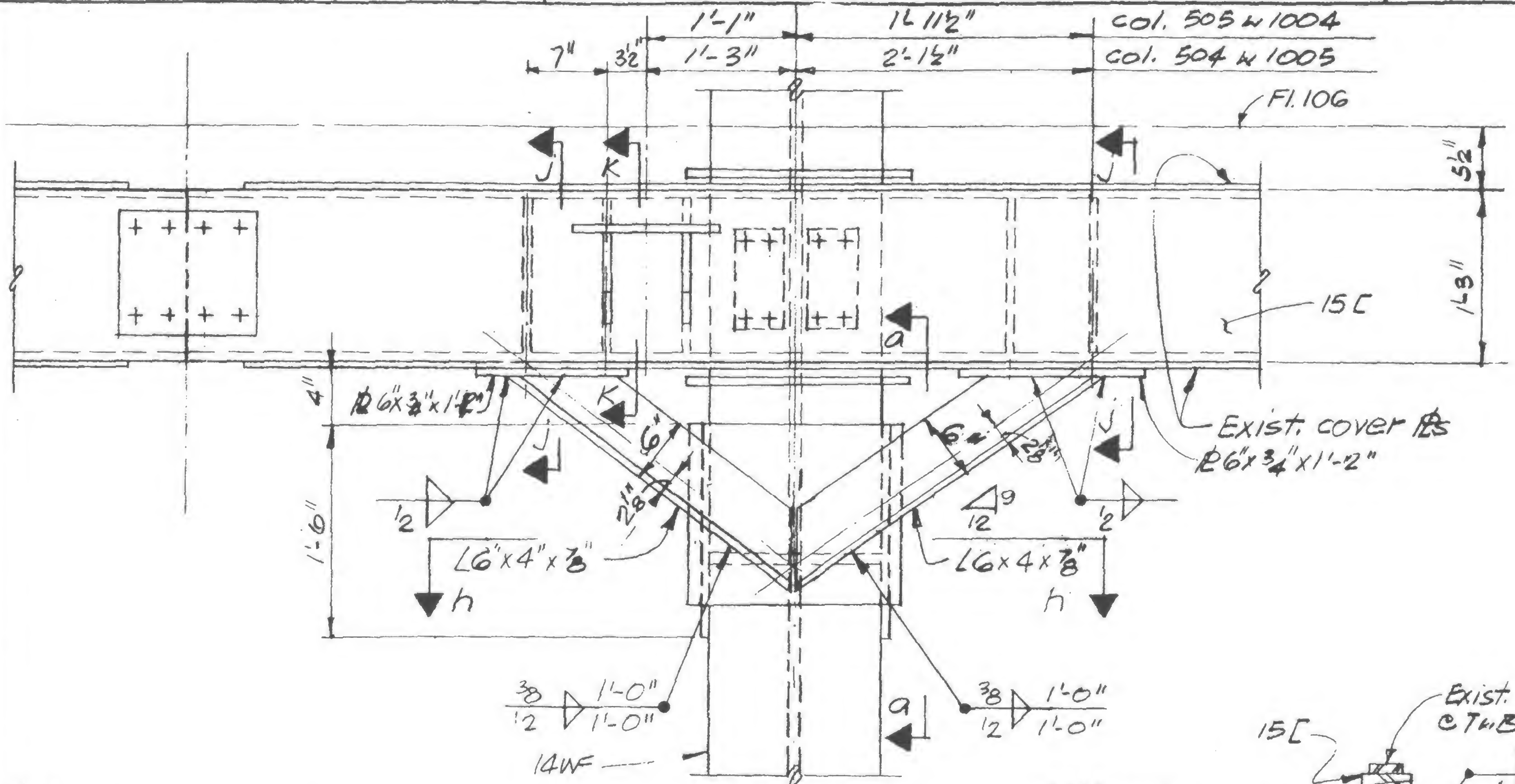


## REVISIONS

7/30/71

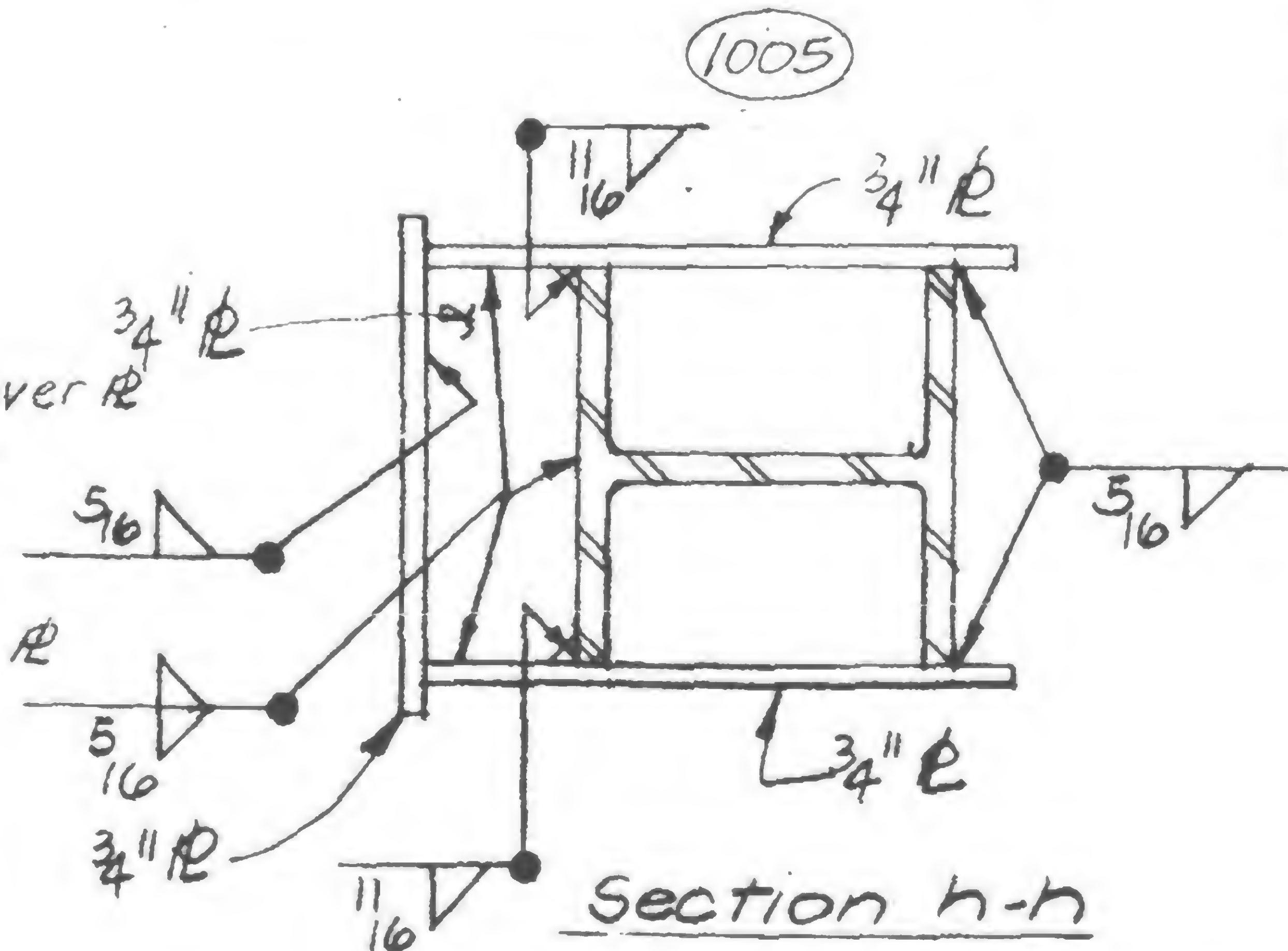
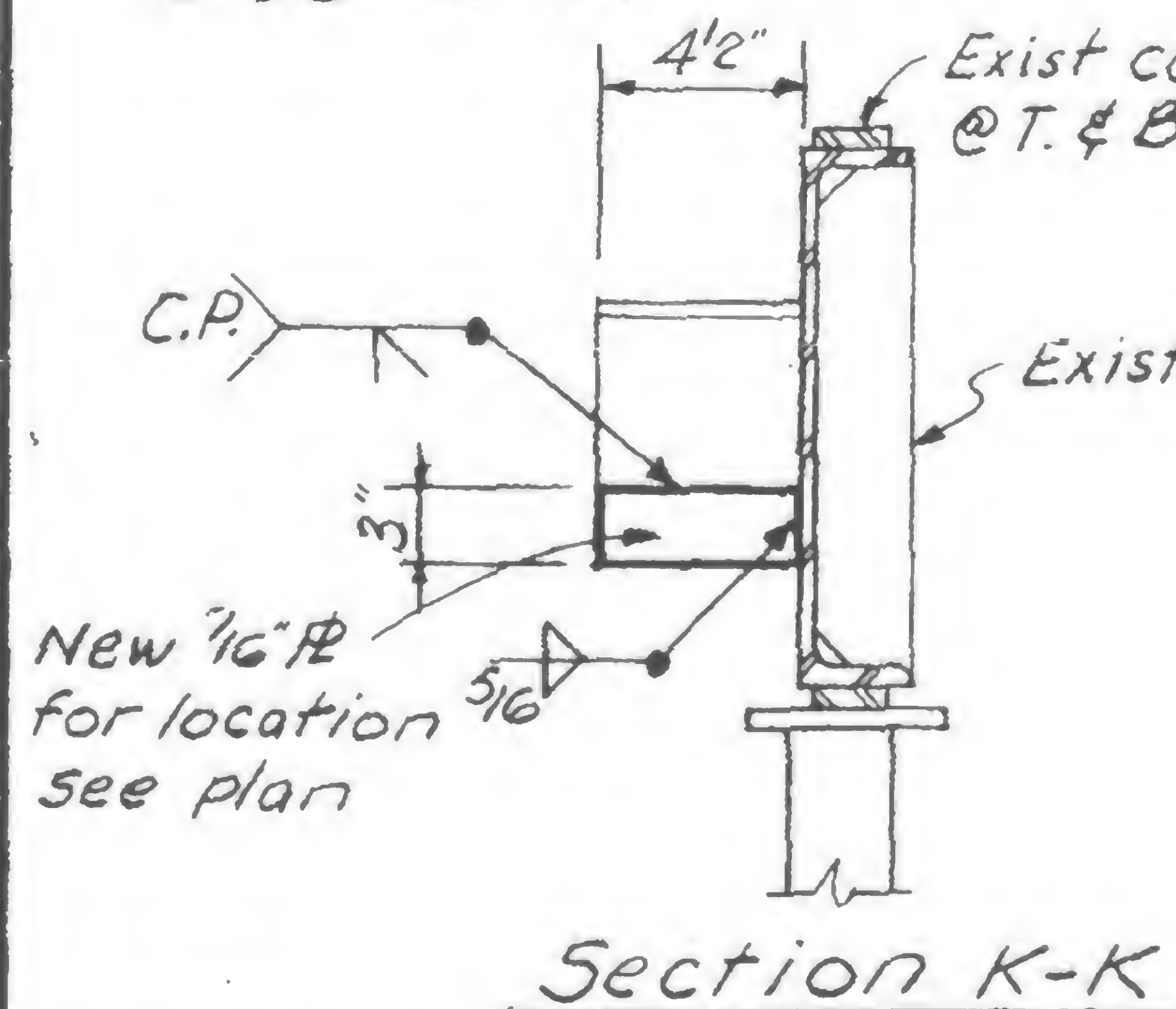
10/6/71

5/9/79



Notes:

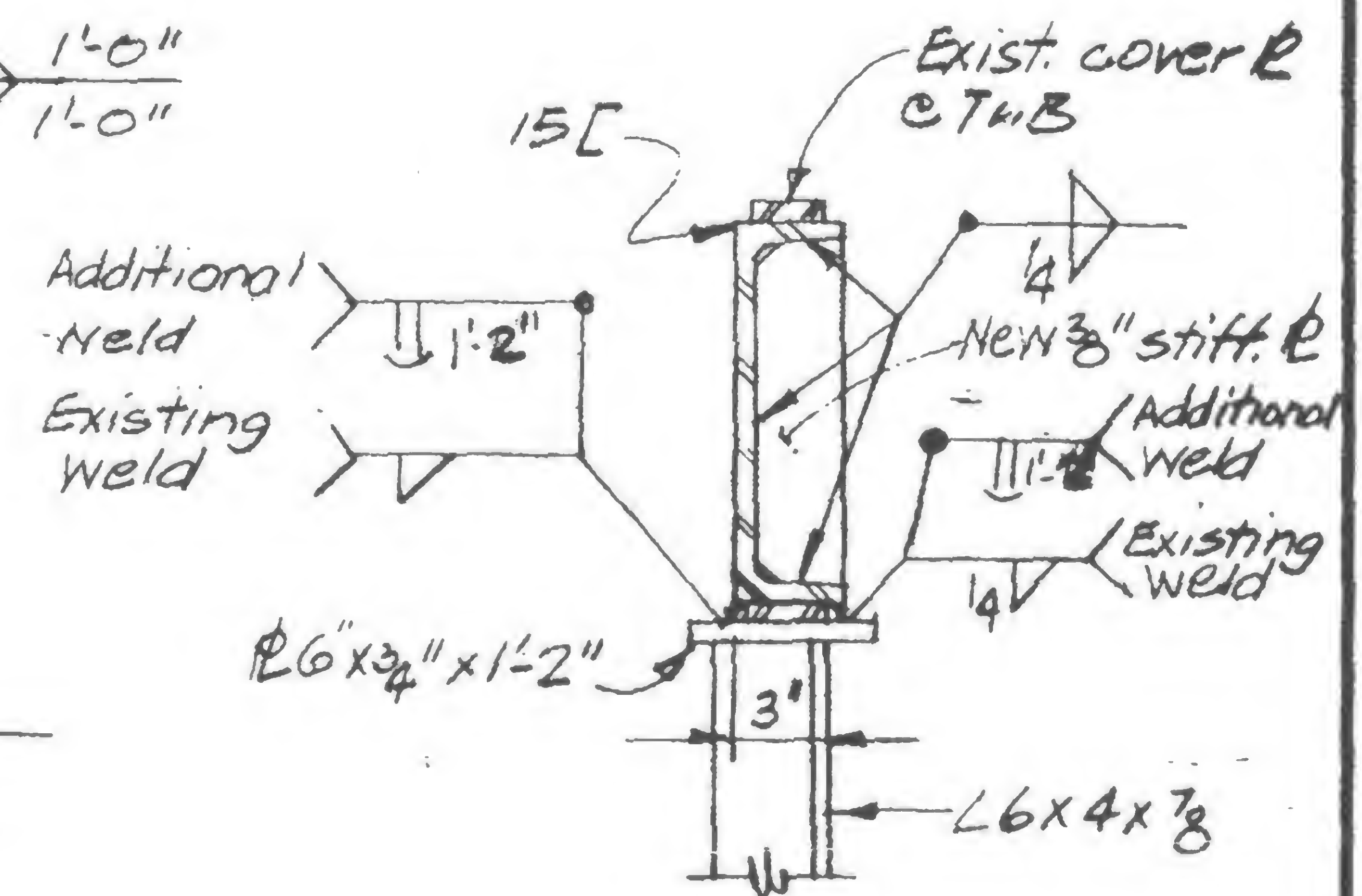
1. All additional detail material to be  $F_y = 50 \text{ ksi}$ .
2. All welding electrodes to be E70xx.



Section h-h

DETAIL 987 C

@ Col. 1005, as shown existing  
 @ Col. 504, 505 & 1004, similar existing



Section j-j



DESIGNED

**BRAWN**

SC

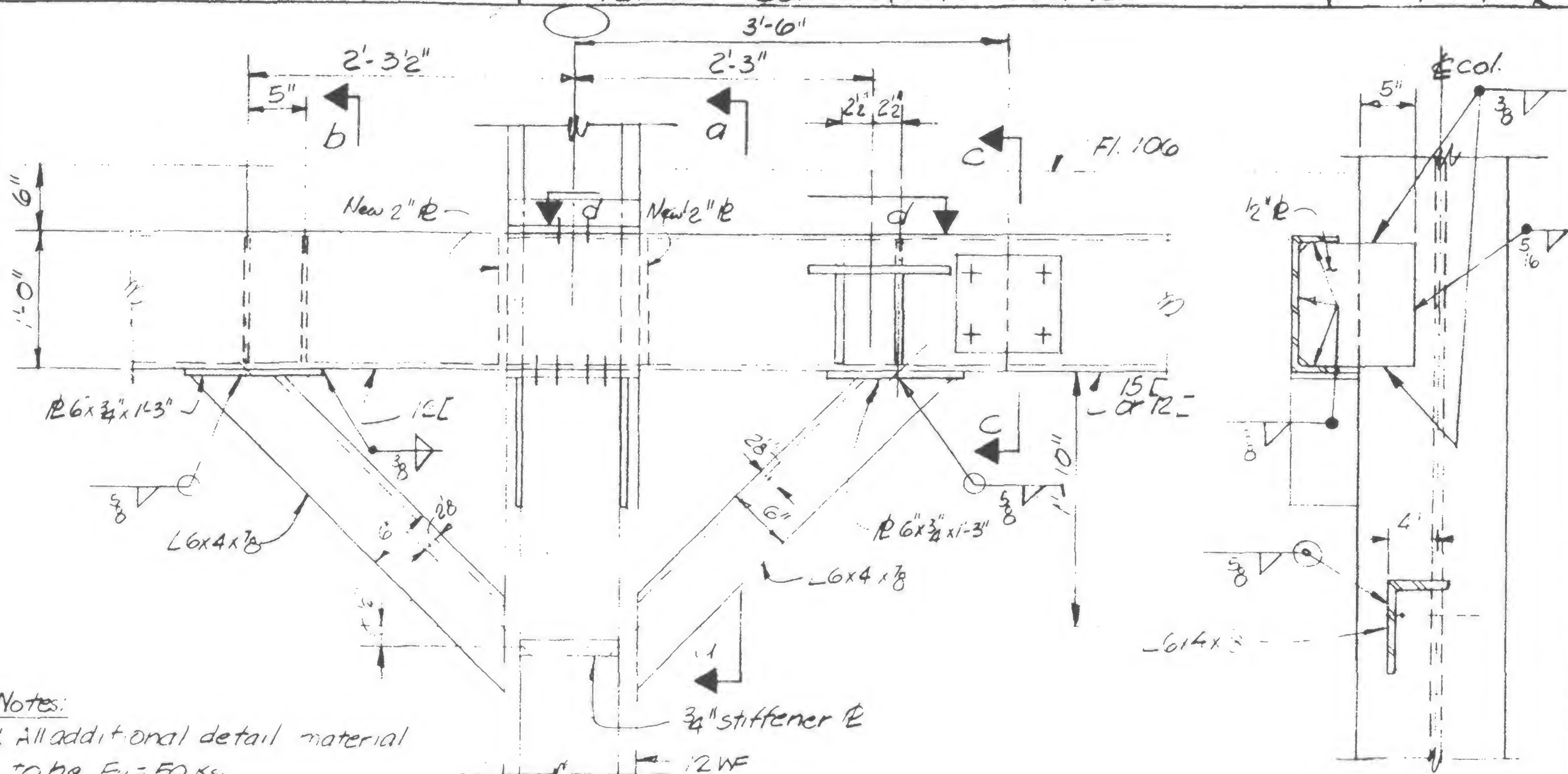
## REVIEWS

REVIEWED  
A. P. Hoover

19-A-987.3



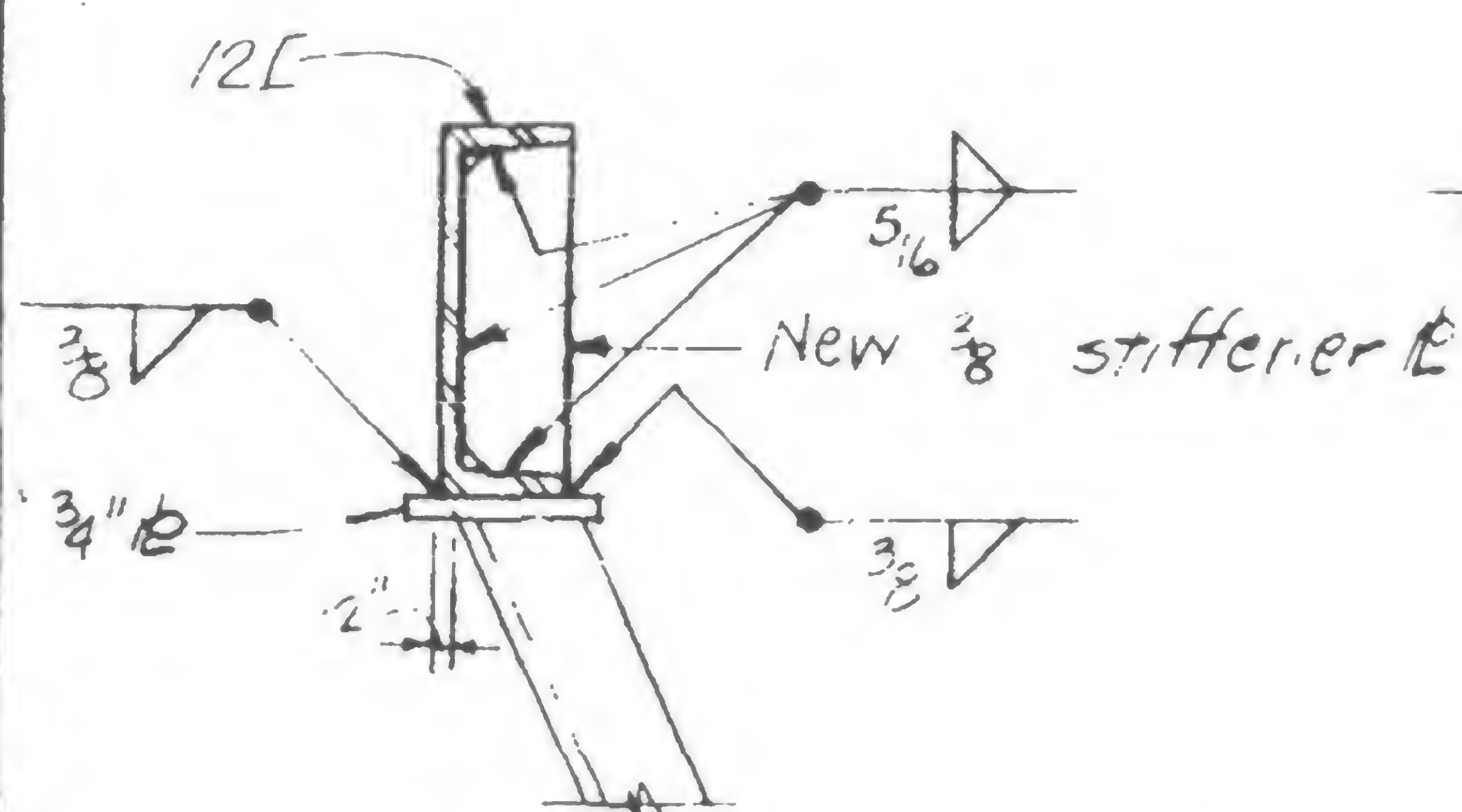
## REVIEWS



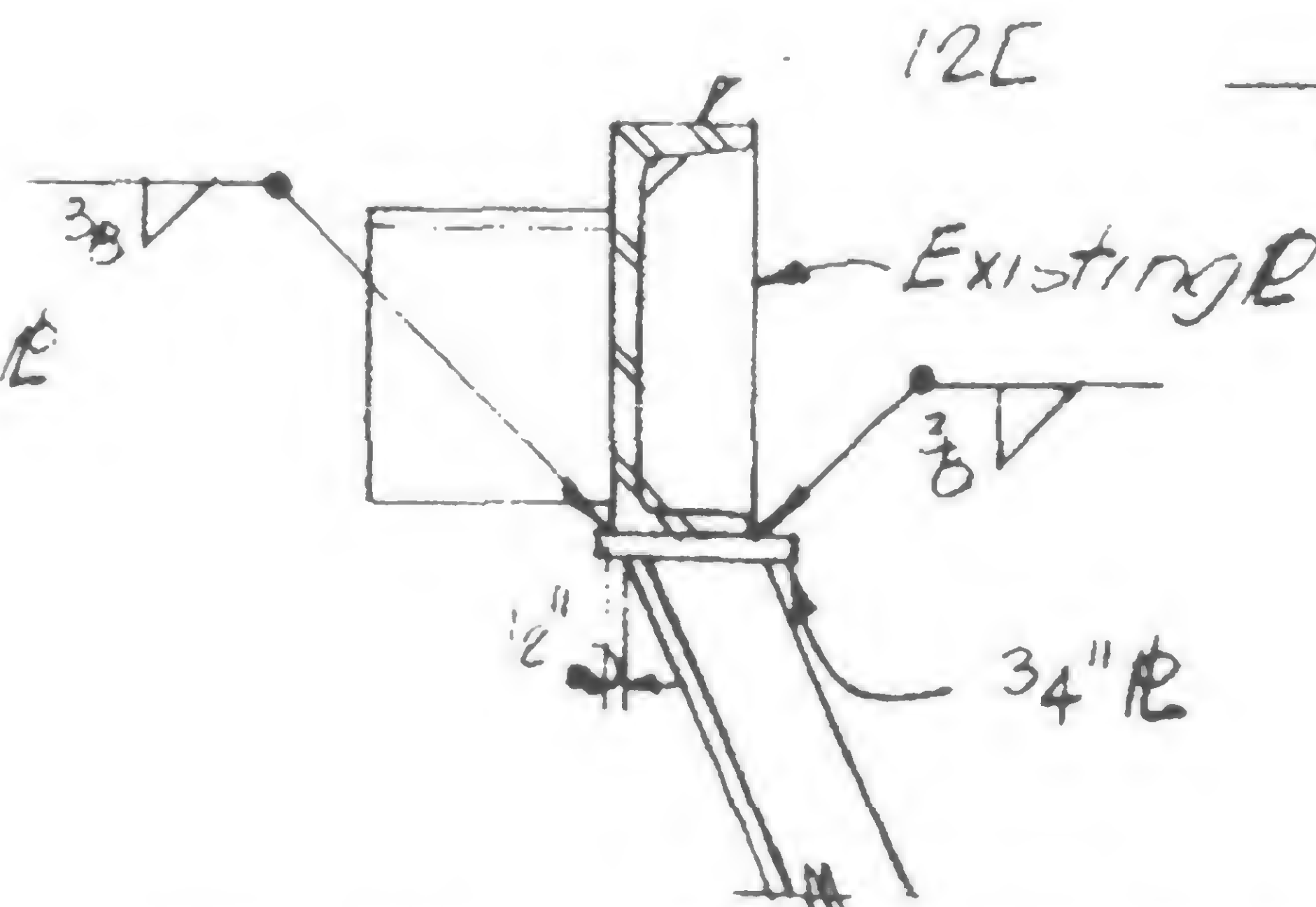
Section a-a

Notes:

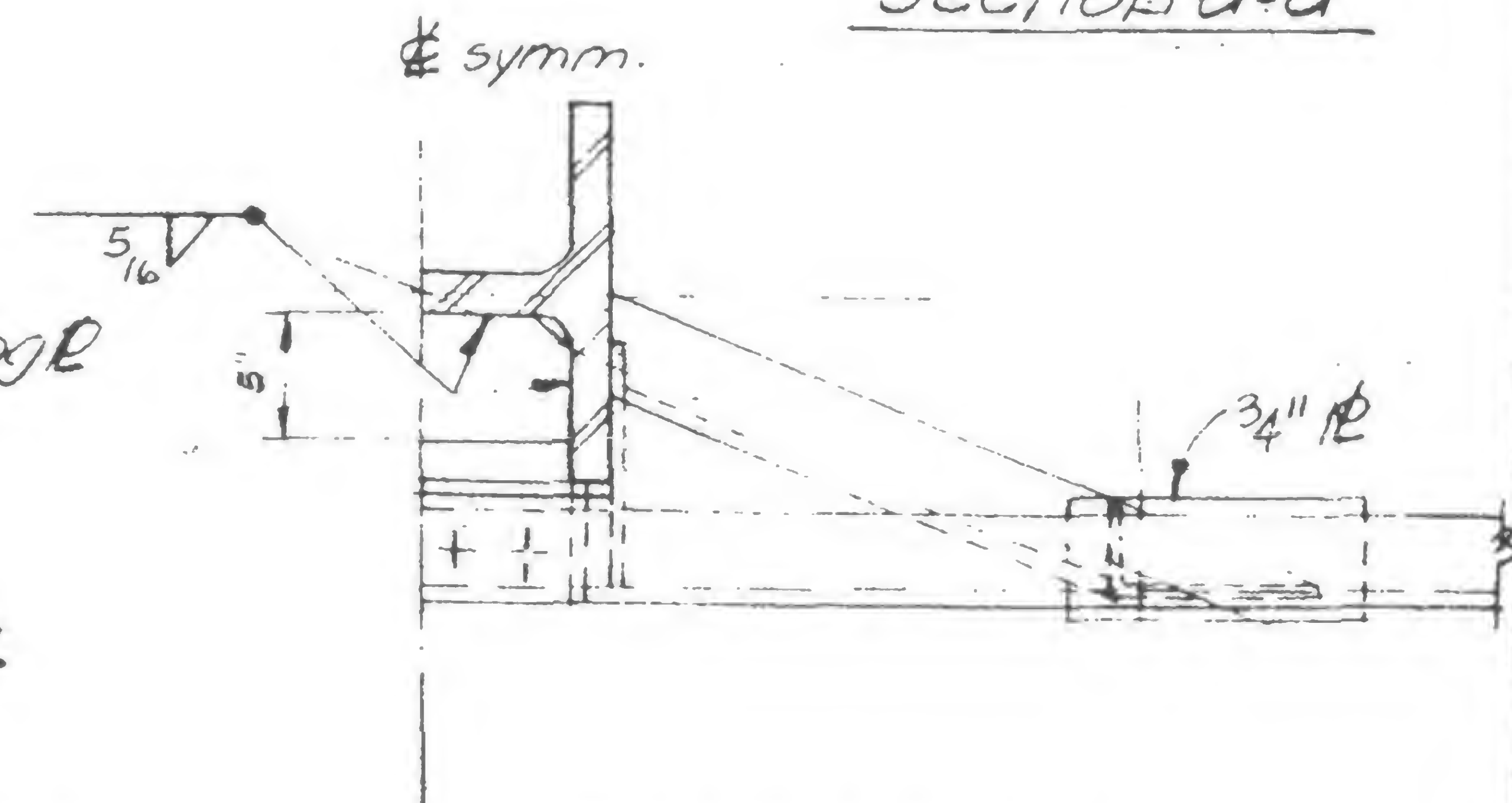
1. All additional detail material to be  $F_y = 50 \text{ ksi}$ .
2. All welding electrodes to be E70xx.



Section b-b



Section c-c



Section d-d

@ col 601, as shown      Retain not required  
3 col 608, 901 & 908, similar New

19-A-987.4





SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

WTC 444.00

PROJECT

THE WORLD TRADE CENTER

TITLE

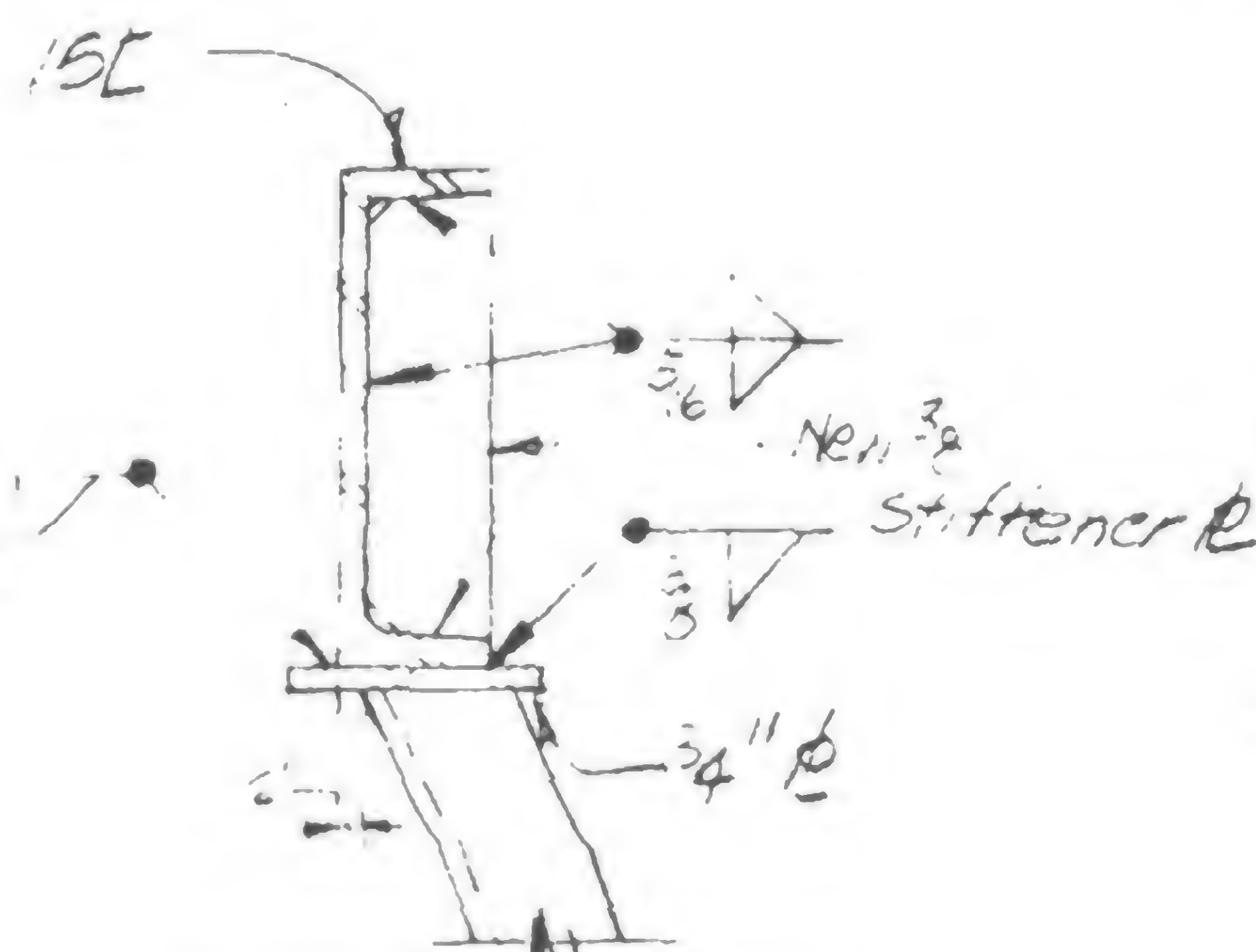
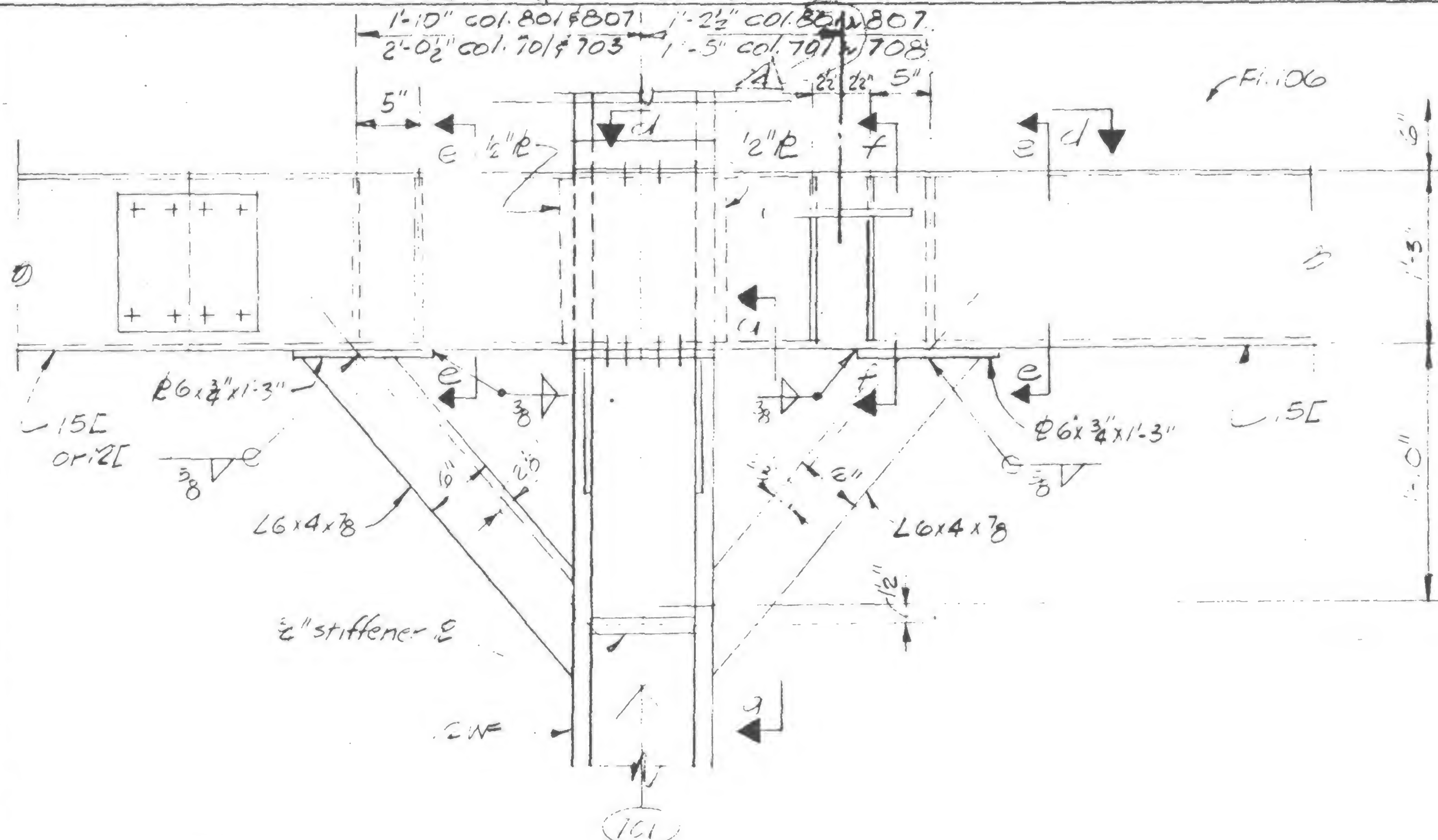
FL. 106 CONNECTION DETAILS

DATE

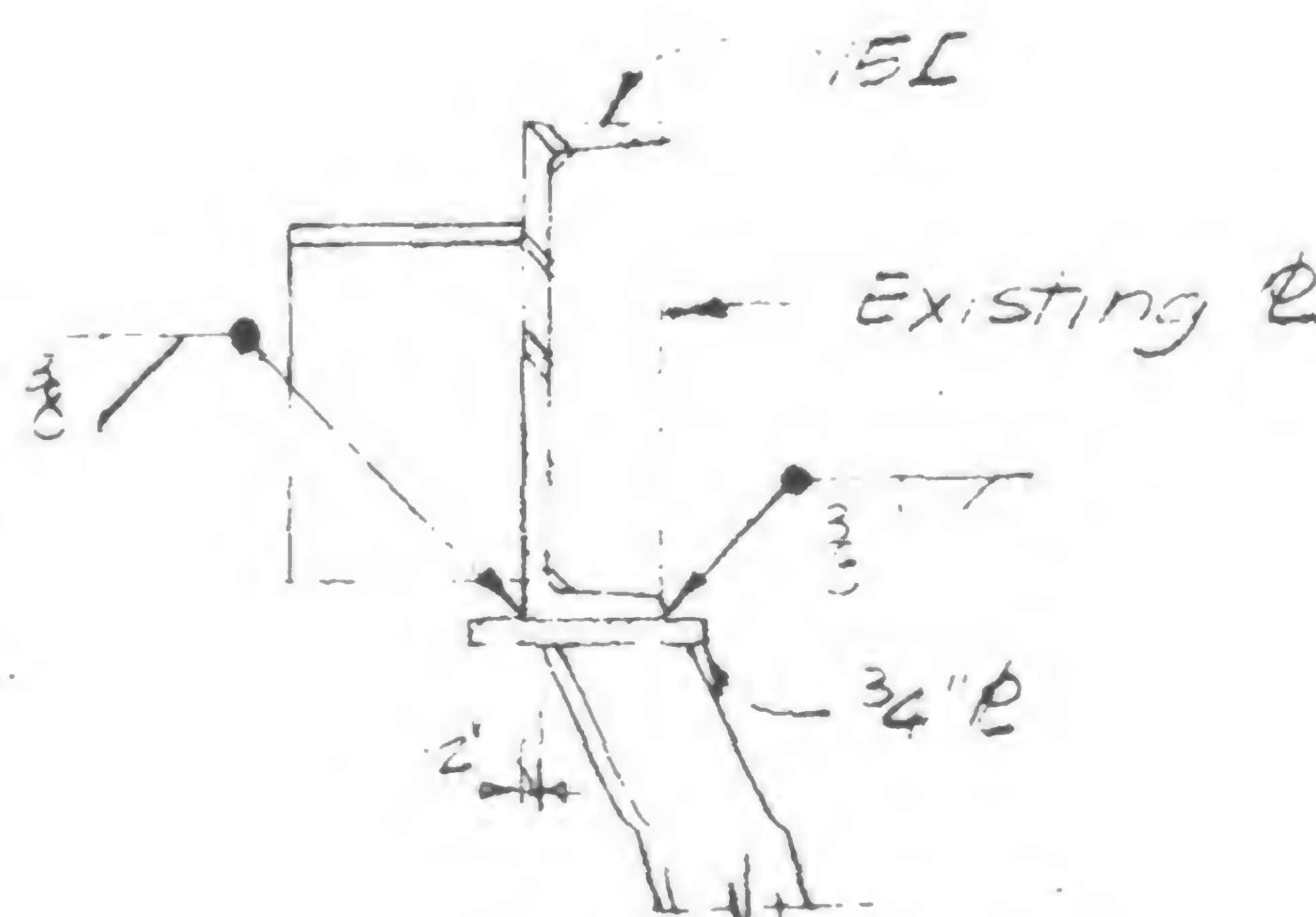
5/9/79

REVISIONS

11-30-79 4



SECTION E-E



SECTION F-F

## Notes

1. All additional detail material to be  $F_y = 50 \text{ ksi}$ .
2. All welding electrodes to be E70xx.

Reinf. not required col. 701  
 DETAIL 387E Col. 701 & 708 New  
 DETAIL 387F Col. 801 & 807 New

19-A-3875



DRAWN

REVIEWED

10/28



PROJECT

THE WORLD TRADE CENTER

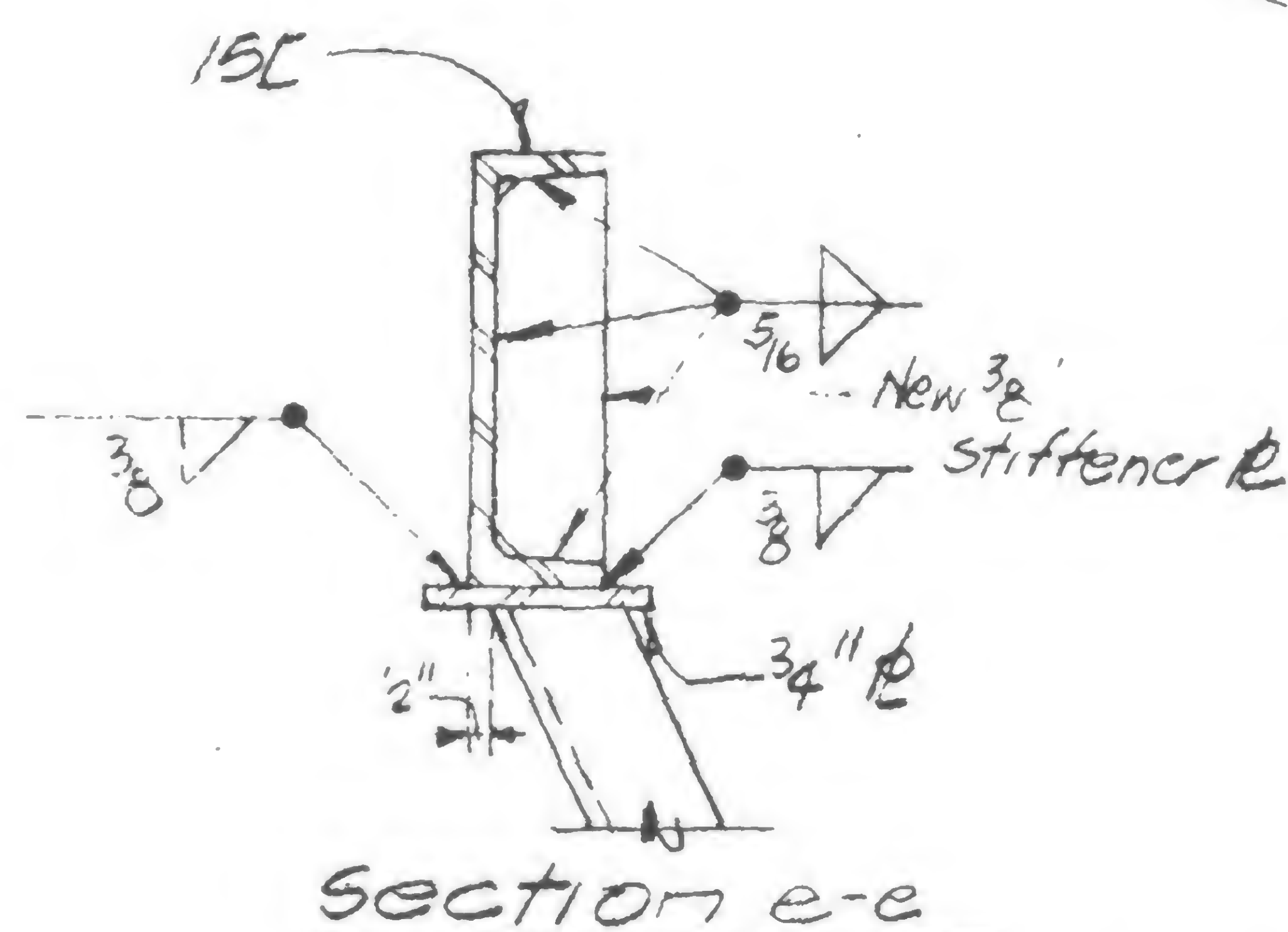
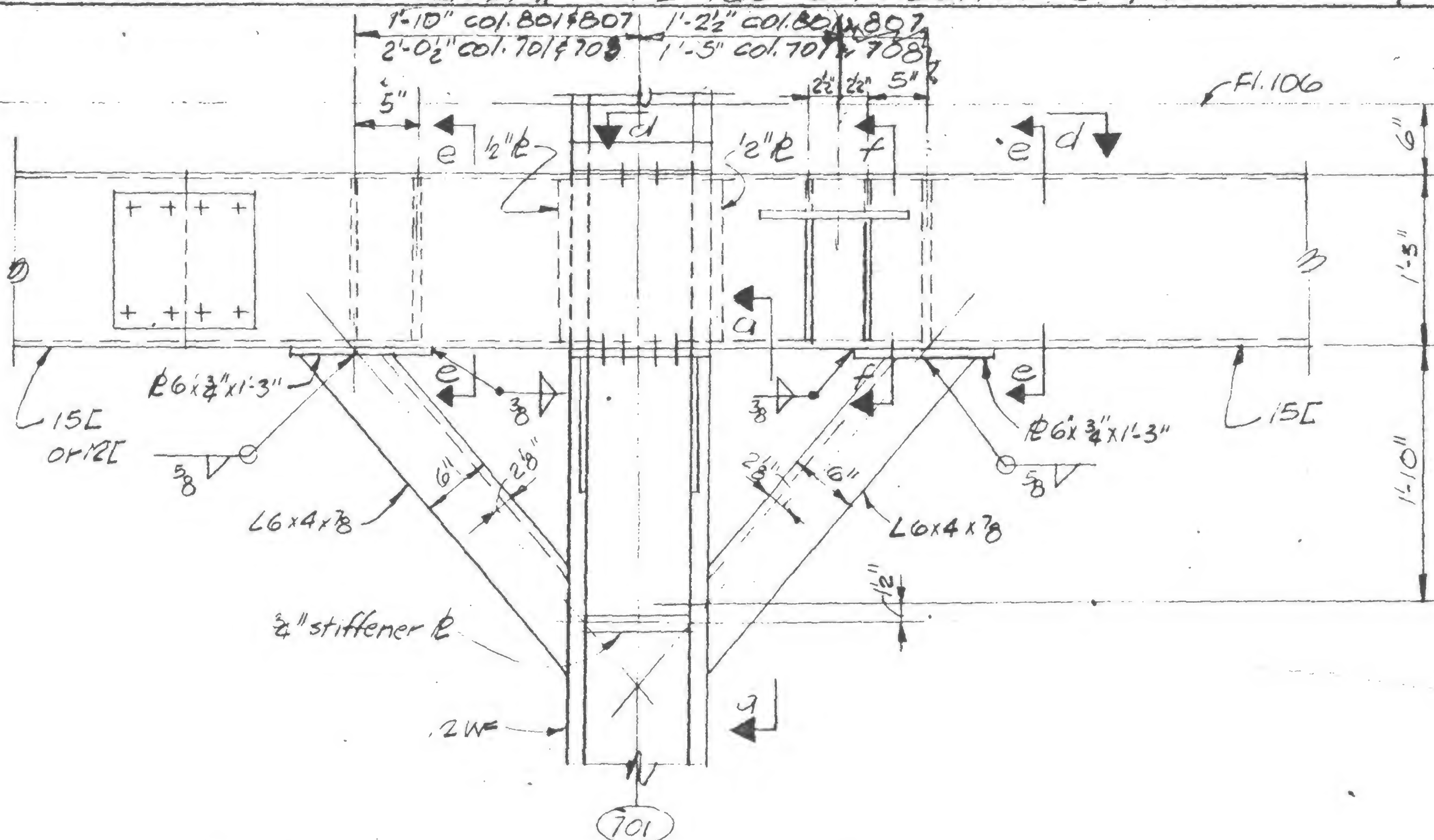
TITLE

FL. 106 CONNECTION DETAILS

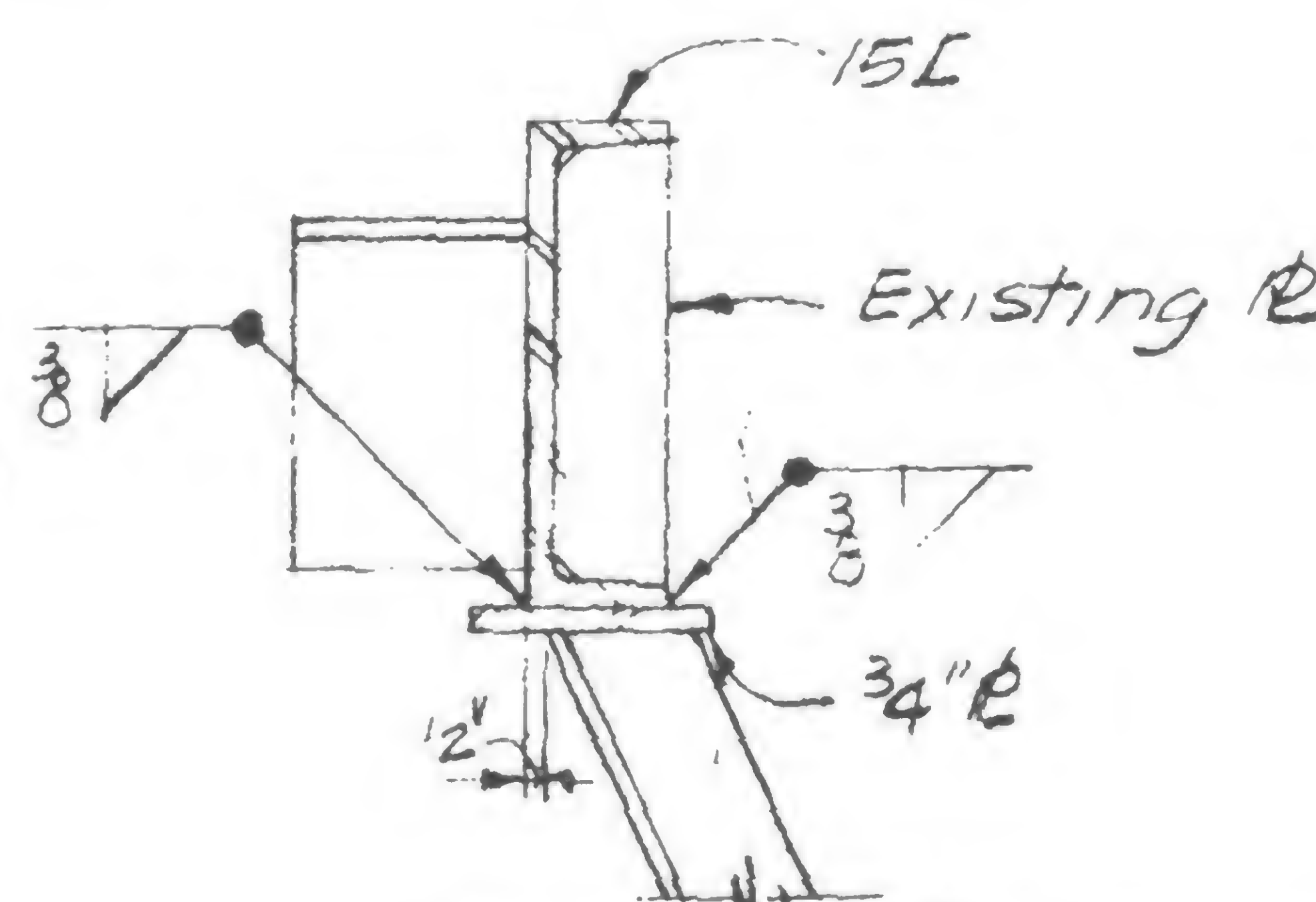
DATE

5/9/79

VISIONS



Section e-e



Section f-f

## Notes:

1. All additional detail material to be  $F_y = 50 \text{ ksi}$ .
2. All welding electrodes to be E70xx

DETAIL 987E Col. 701 & 708 New  
 DETAIL 987F Col. 801 & 807 New

Reinf. not required col. 701



WAB



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE FL.106 CONNECTION DETAILS

DATE 1-27-71

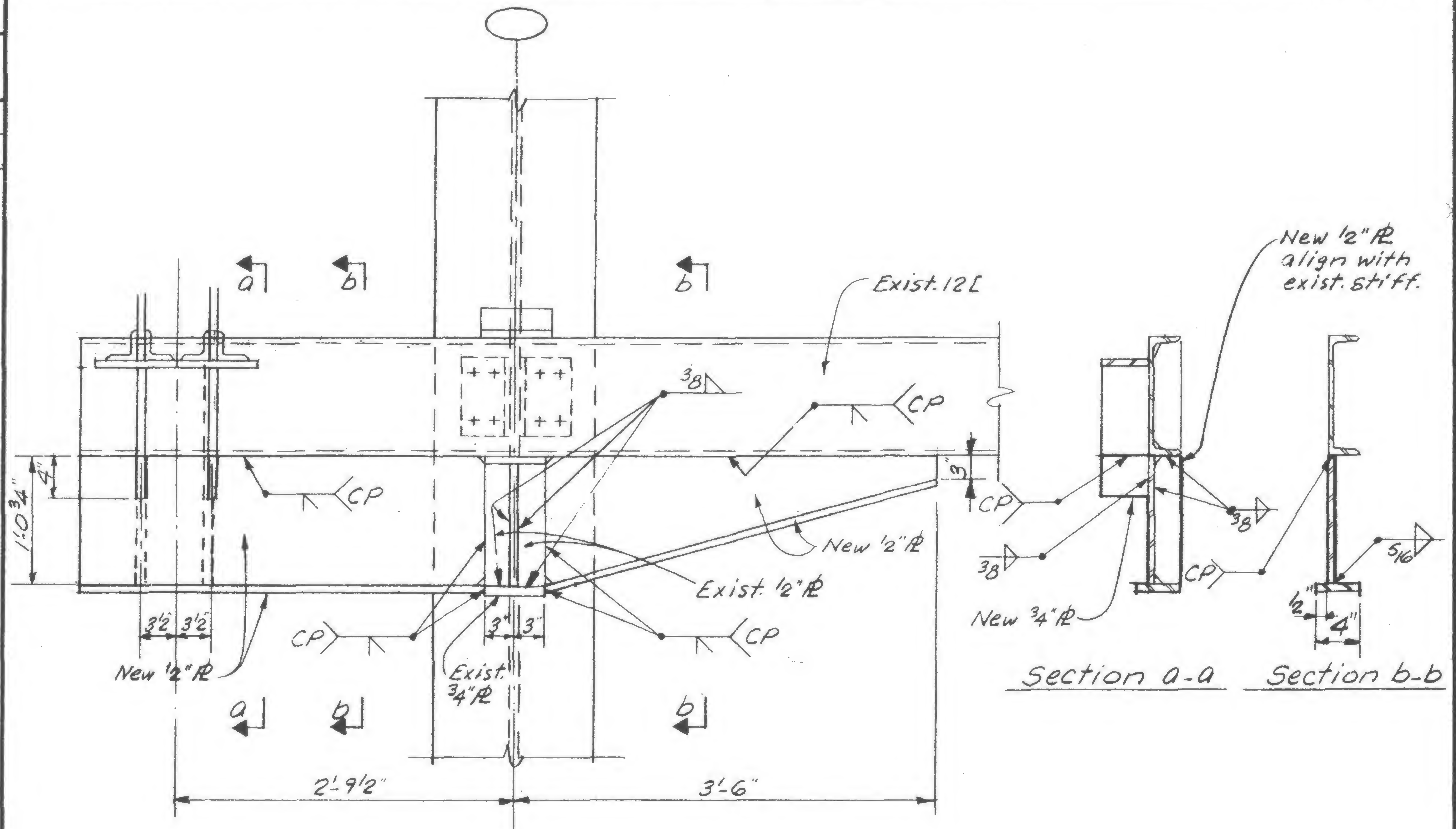
## REVISIONS

Printed

7/30/71

10/6/71

5/9/79



## Detail 987G

Column	1008 as shown	existing
Column	1001 opp. hand	
Column	501 as shown	Reinf. not required.
Column	508 as shown	

DESIGNED  
W. BREWERDRAWN  
A. FRANQUIREVIEWED  
1.1.1.1.1.

19-A-987G



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

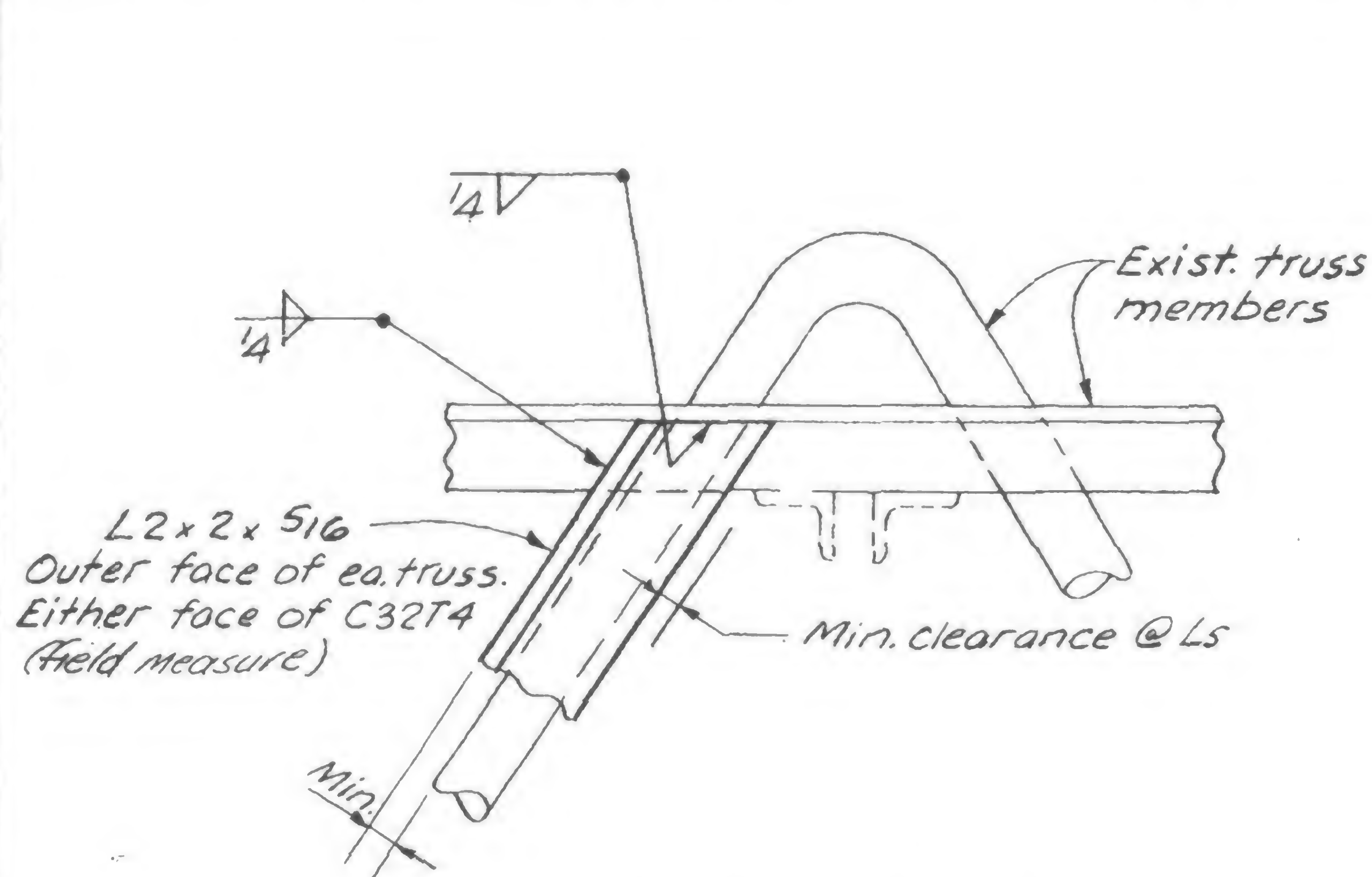
PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS - FLOOR 106

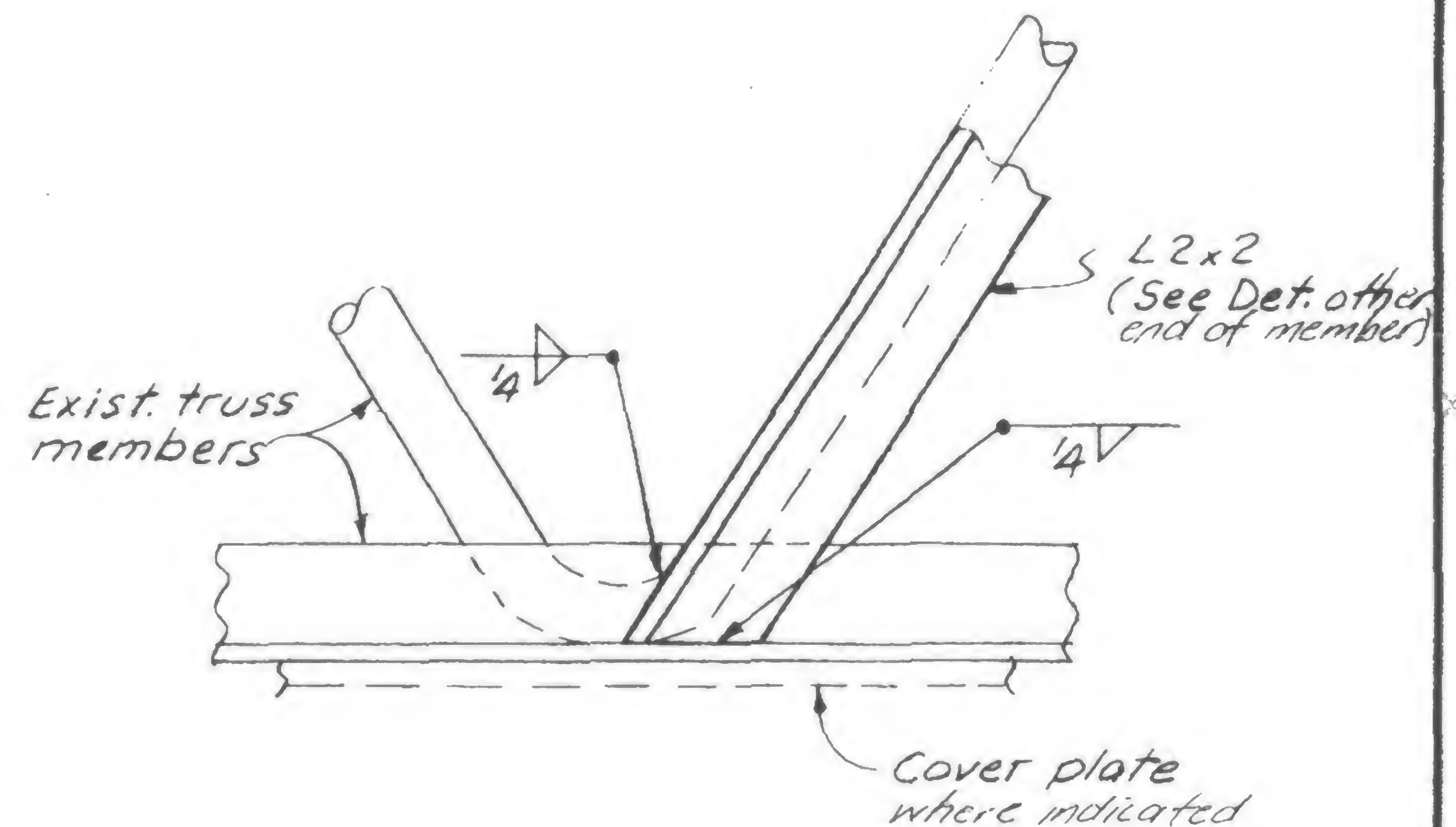
DATE 1/27/71

REVISIONS

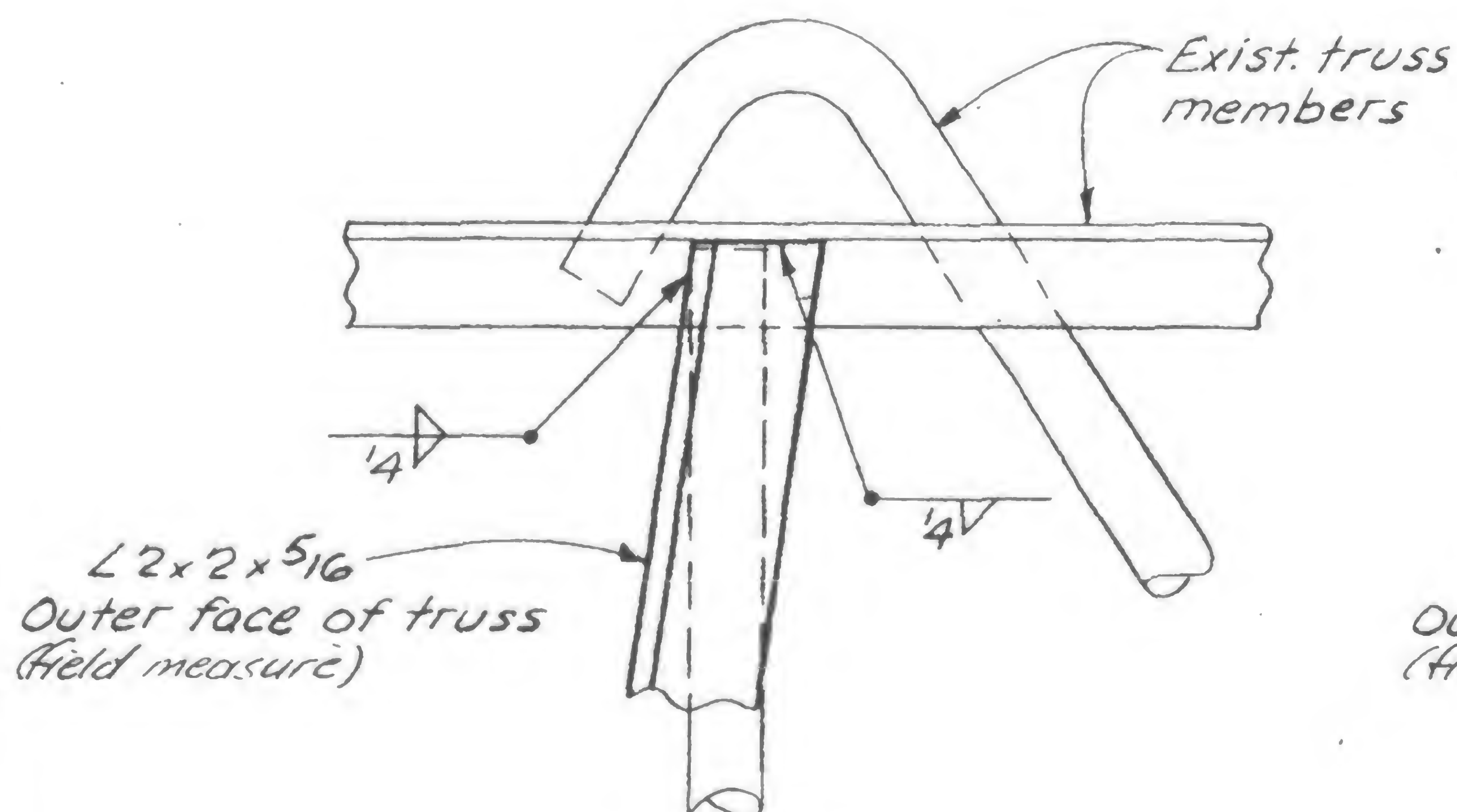
7/30/71  
Printed  
5/9/79



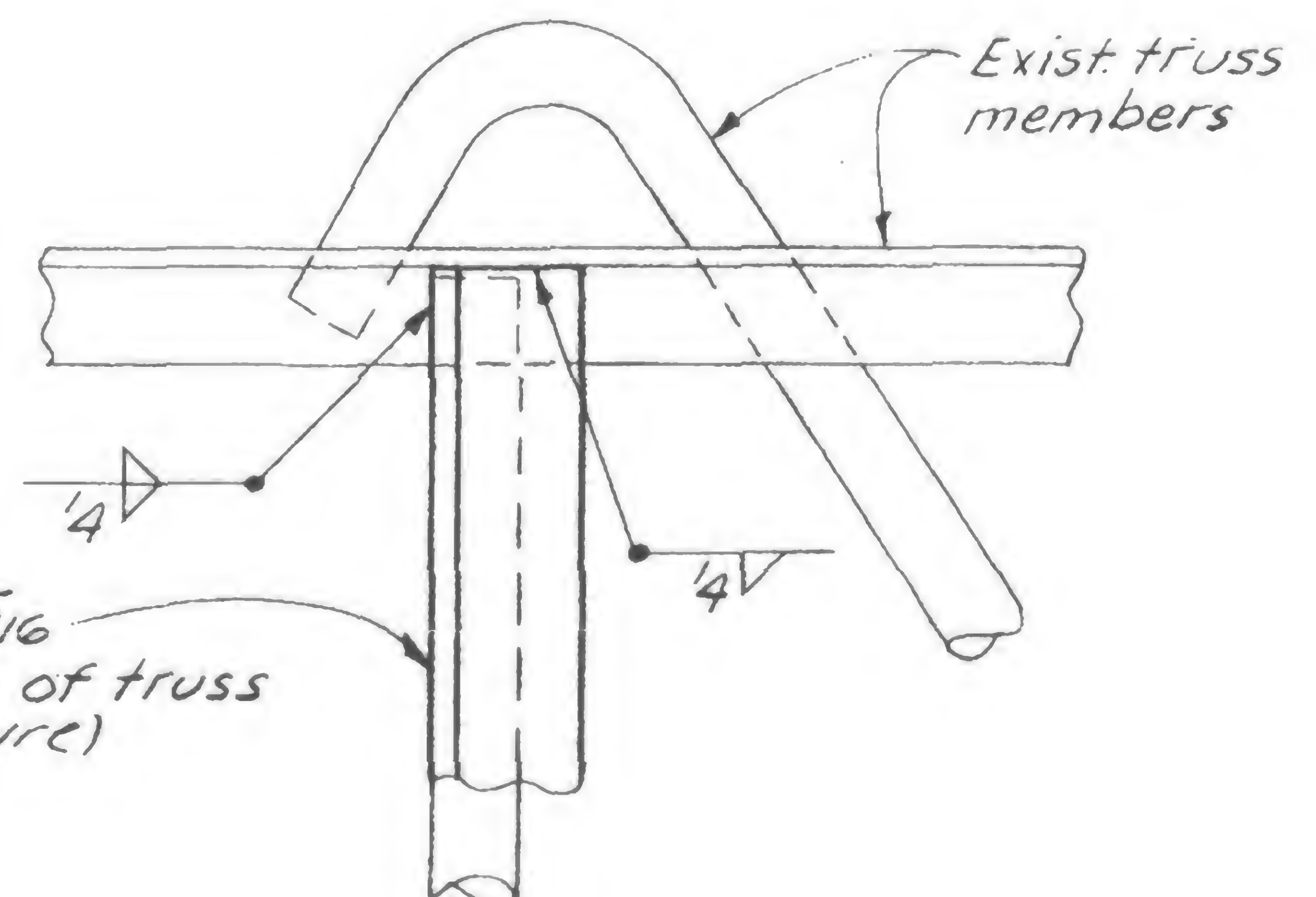
Detail 988A



Detail 988B



Detail 988C



Detail 988D

For Notes see 19-A-985.1

19-A-988.1



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H. ROET

DRAWN  
A. FRANQUI

REVIEWED  
WAB

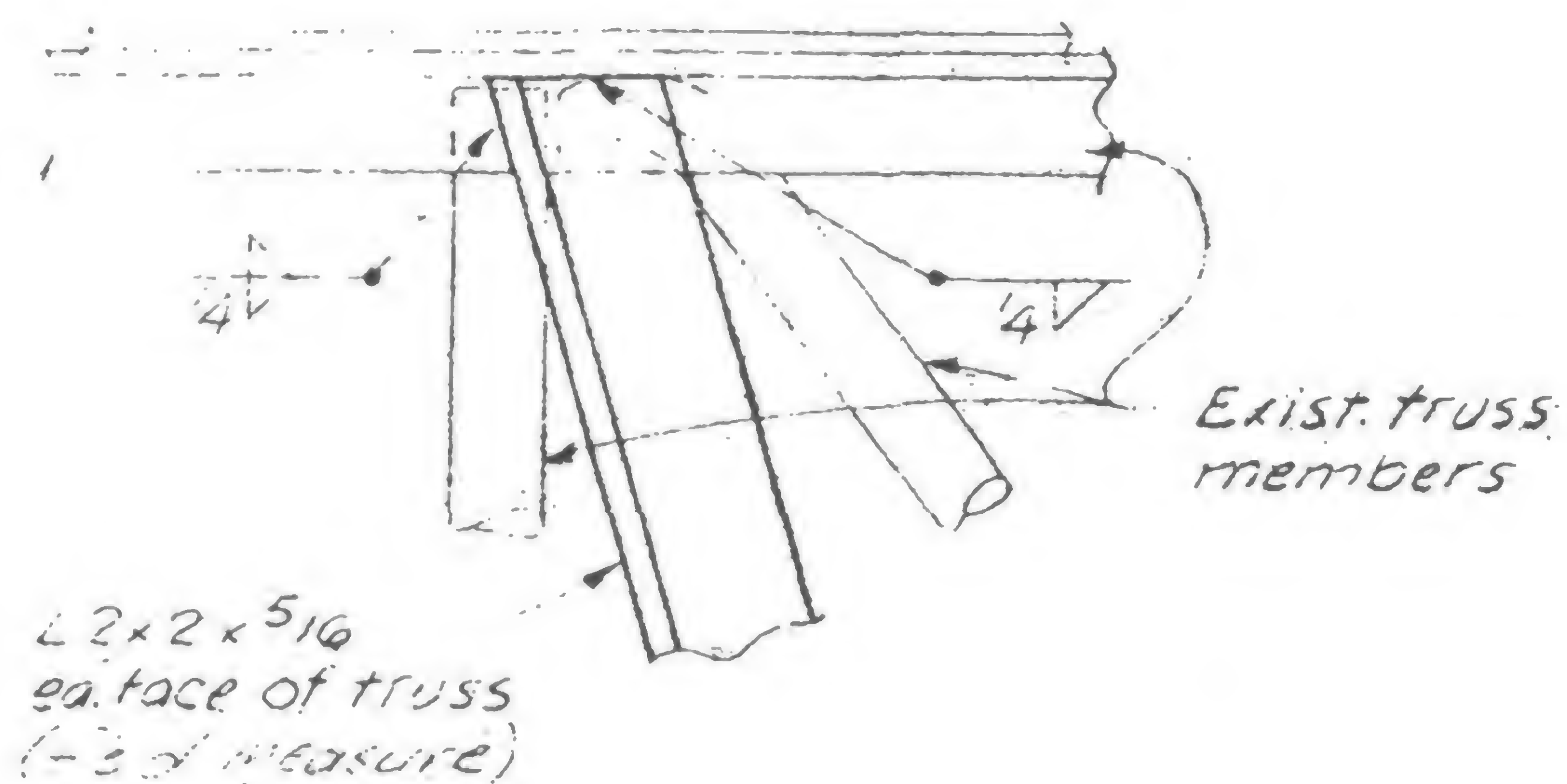


PROJECT THE WORLD TRADE CENTER

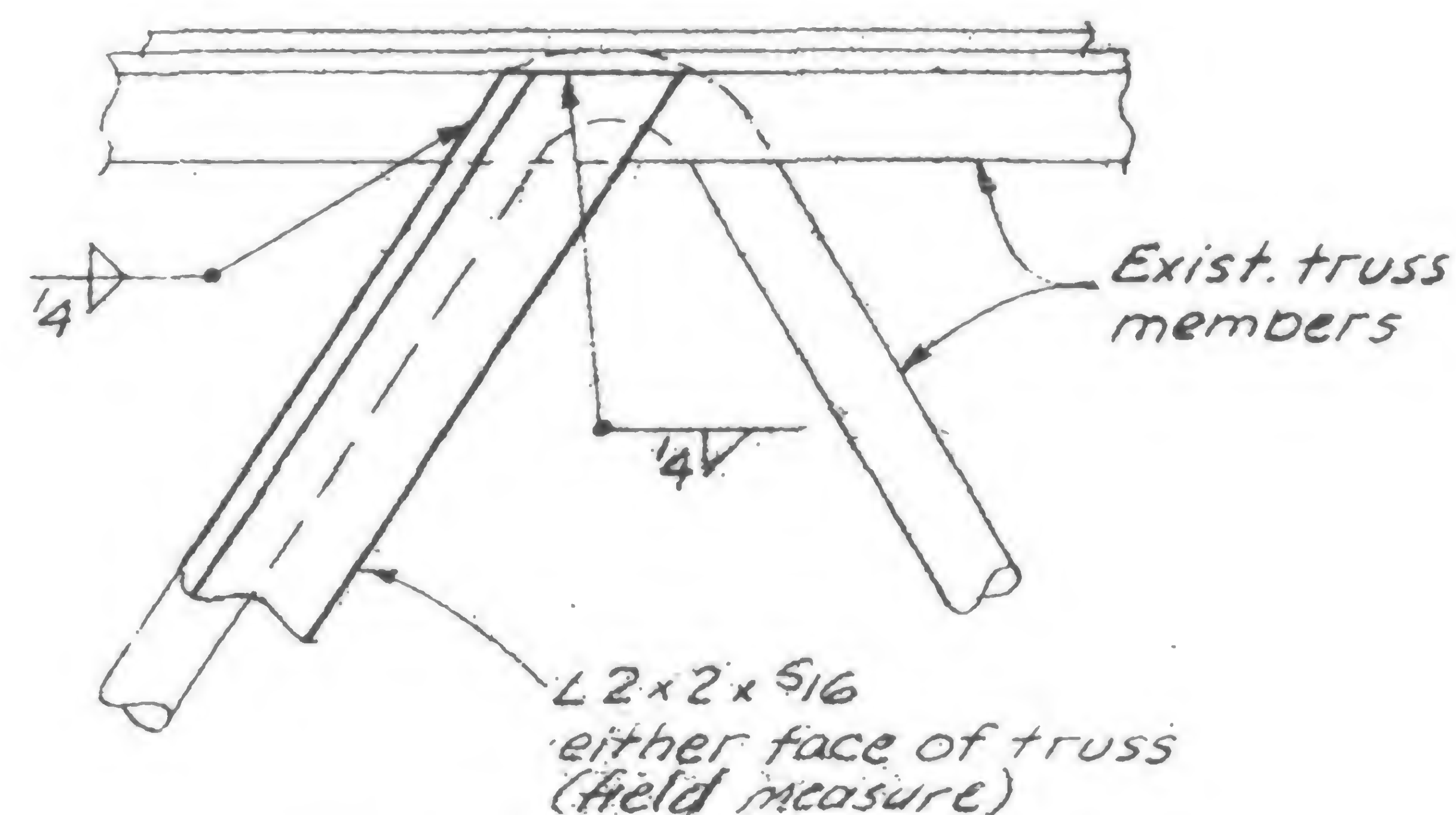
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DATE 5/9/79

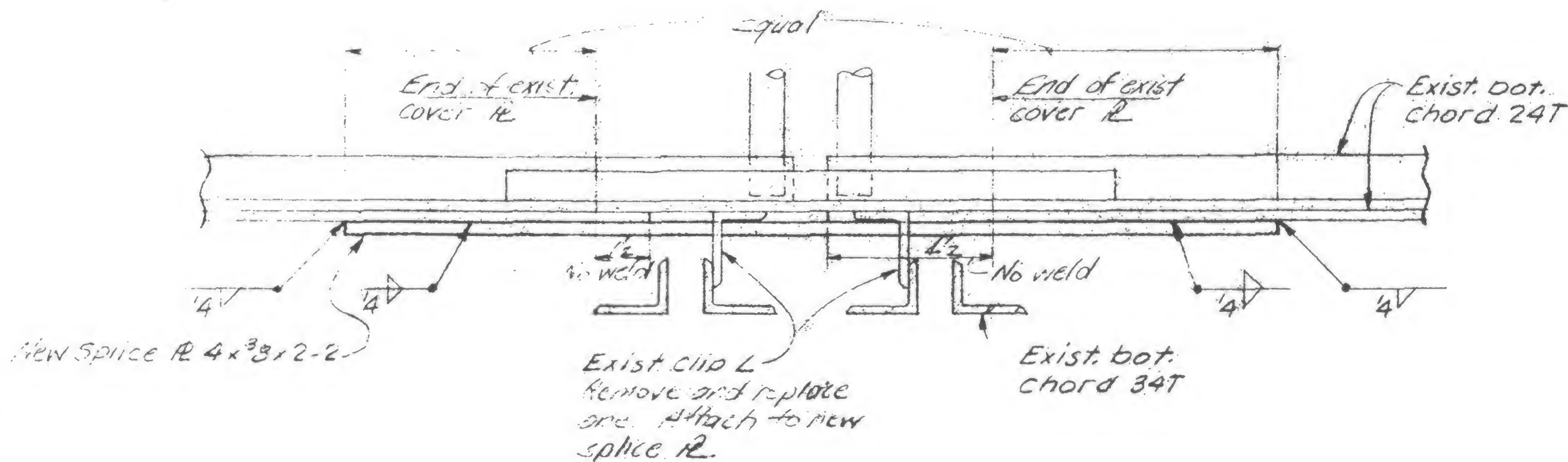
REVISIONS



Detail 988E



Detail 988G



Detail 988F

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A. FRANCOREVIEWED  
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19-A-988.2



SKILLING HELLE CHRISTIANSEN ROBERTSON

Structural & Civil Engineers

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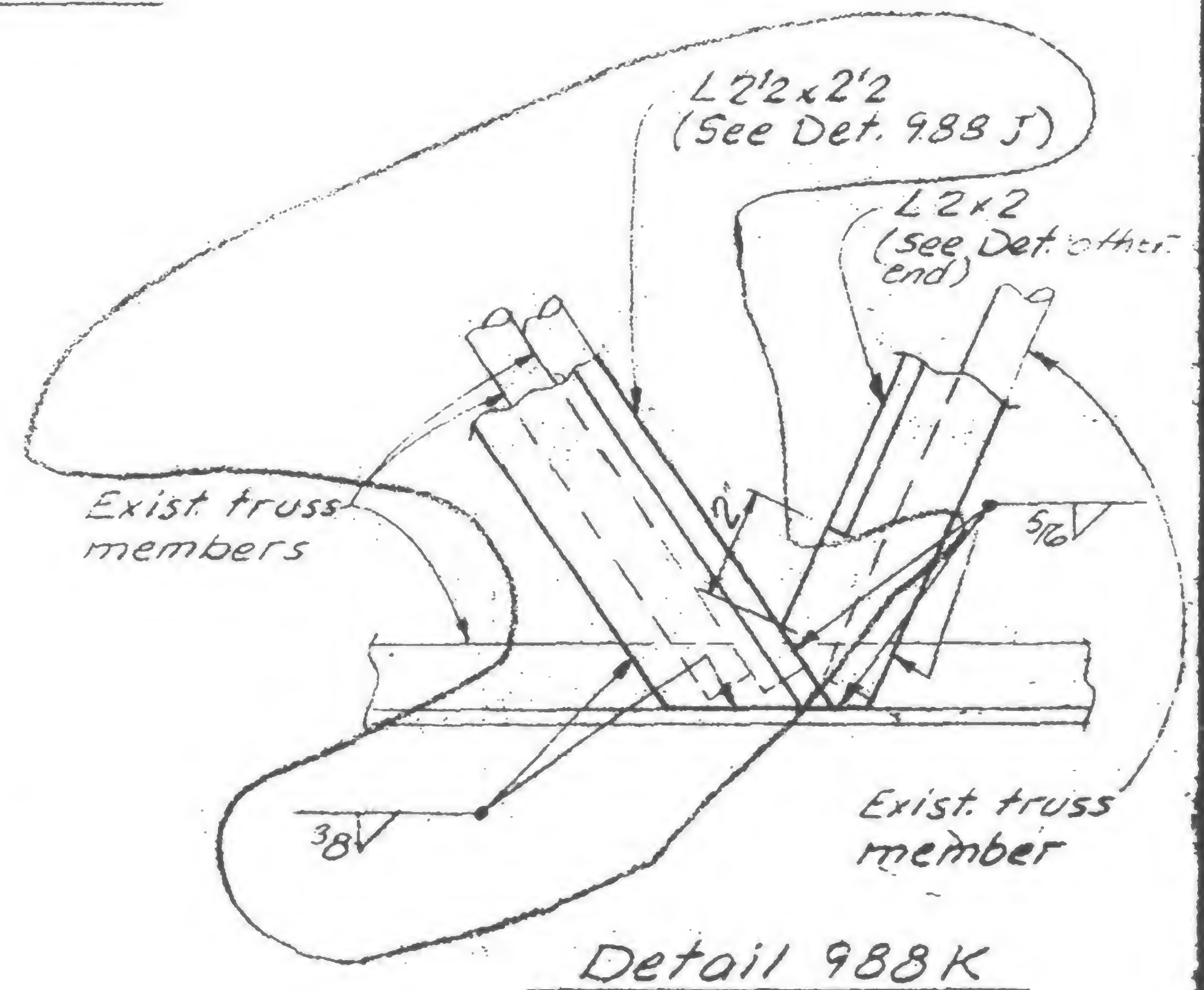
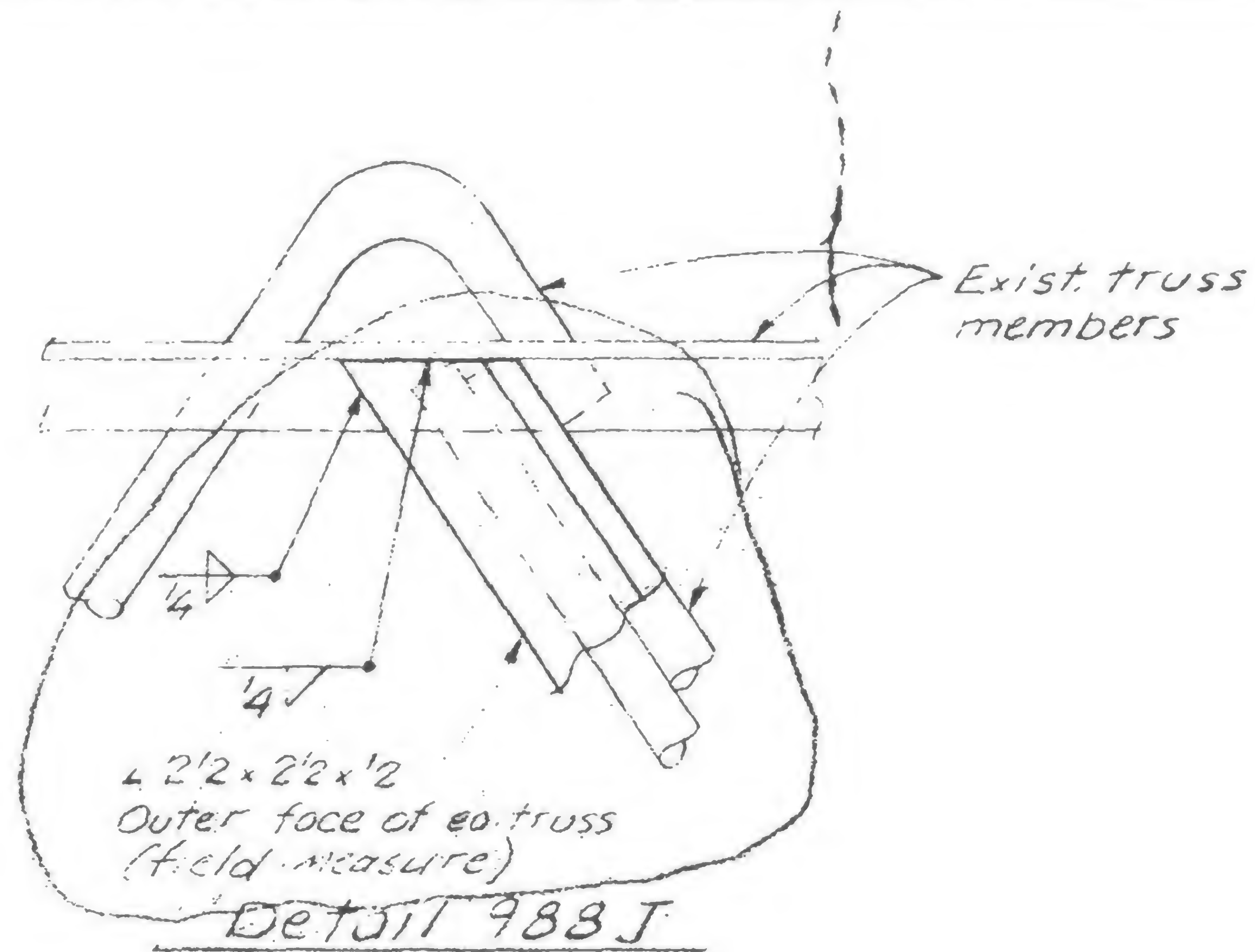
TRUSS DETAILS - FLOOR 106

DATE 1/27/79

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7/30/71

5/9/79



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H. ROET

DRAWN  
A. FRANCO

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W. A. M.

19-A-988.3



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Structural &amp; Civil Engineers

WTC 444.00

PROJECT THE WORLD TRADE CENTER TITLE TRUSS DETAILS - FL 106

DATE 1/27/71

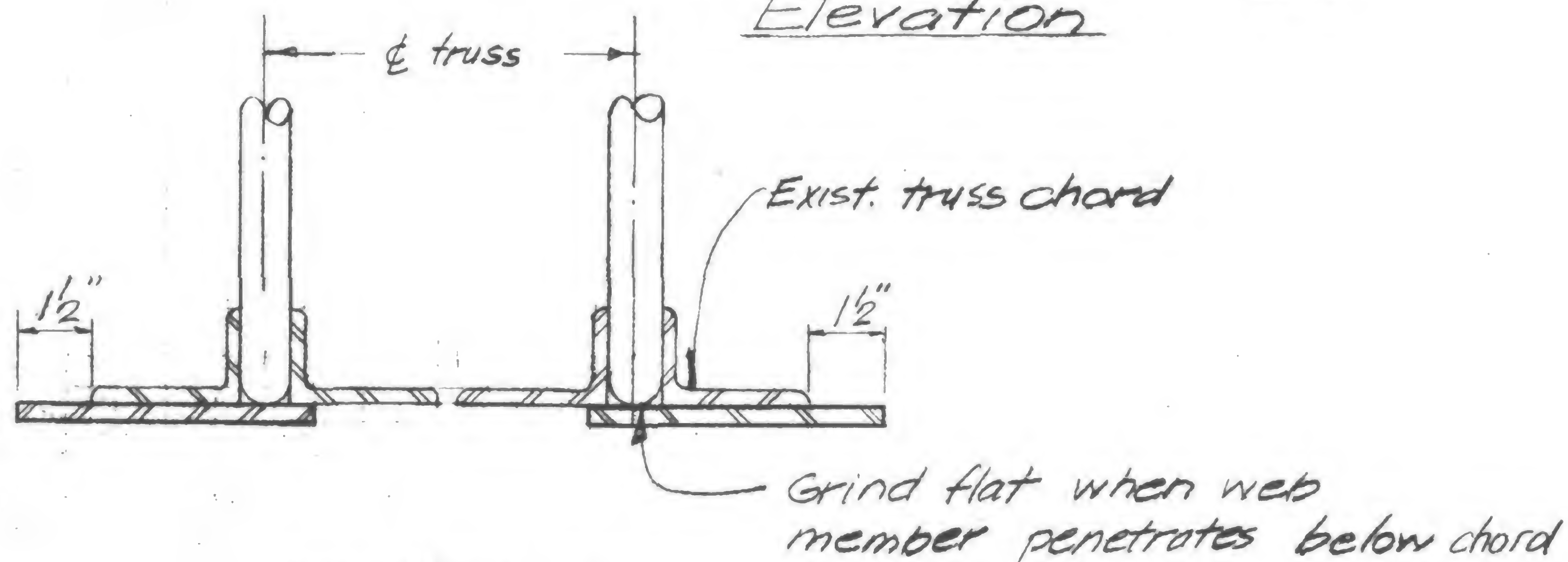
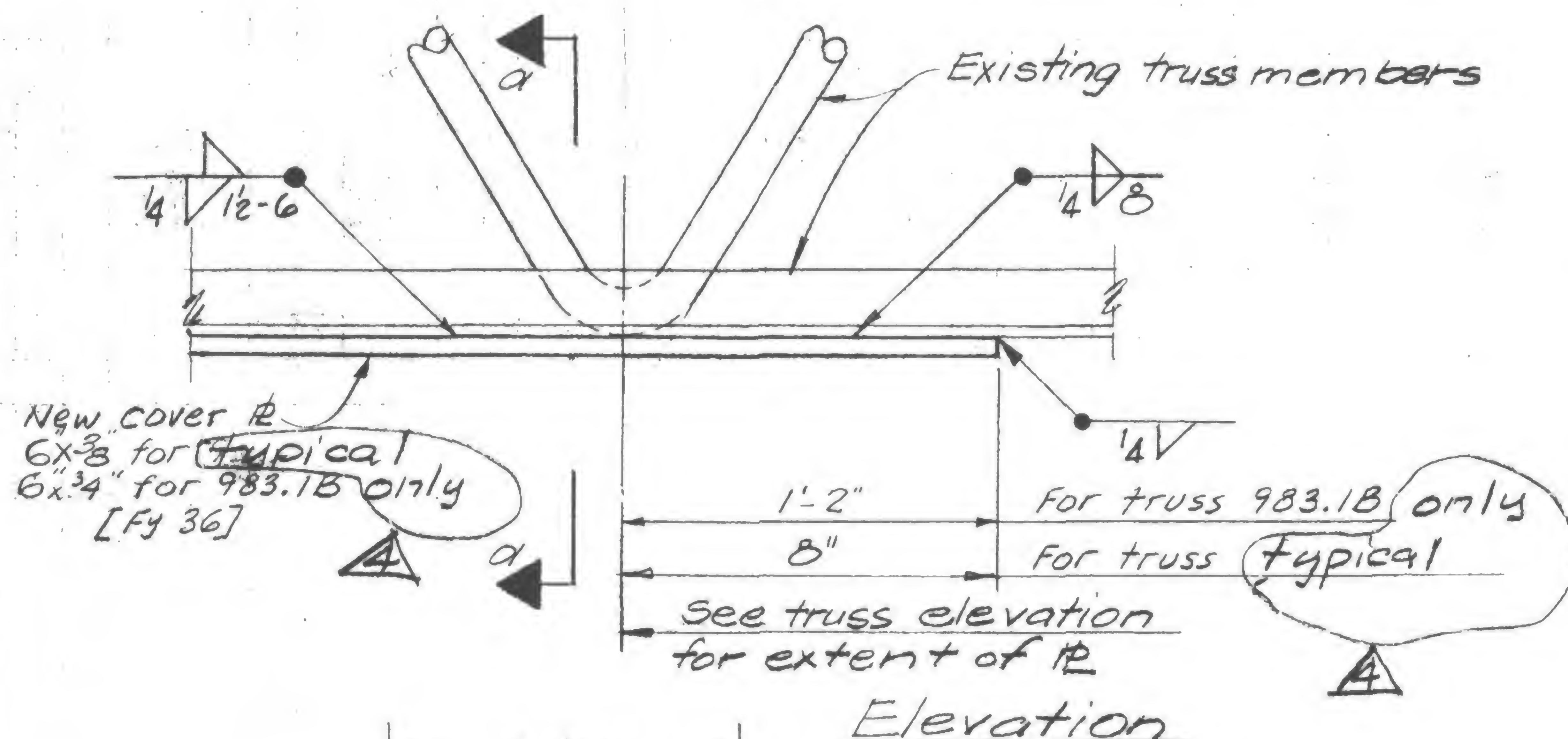
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7/30/71

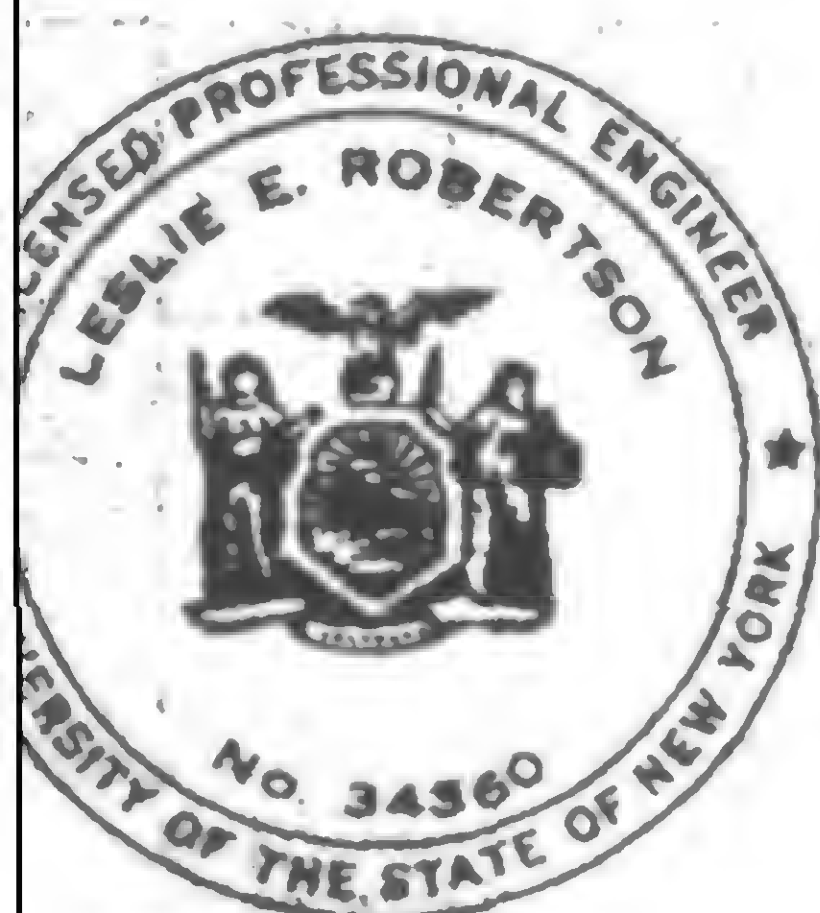
Printed

5/9/79

11/30/79



DETAIL 989A

DRAWN  
P. OrelinREVIEWED  
WAB

19-A-989.1



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Structural &amp; Civil Engineers

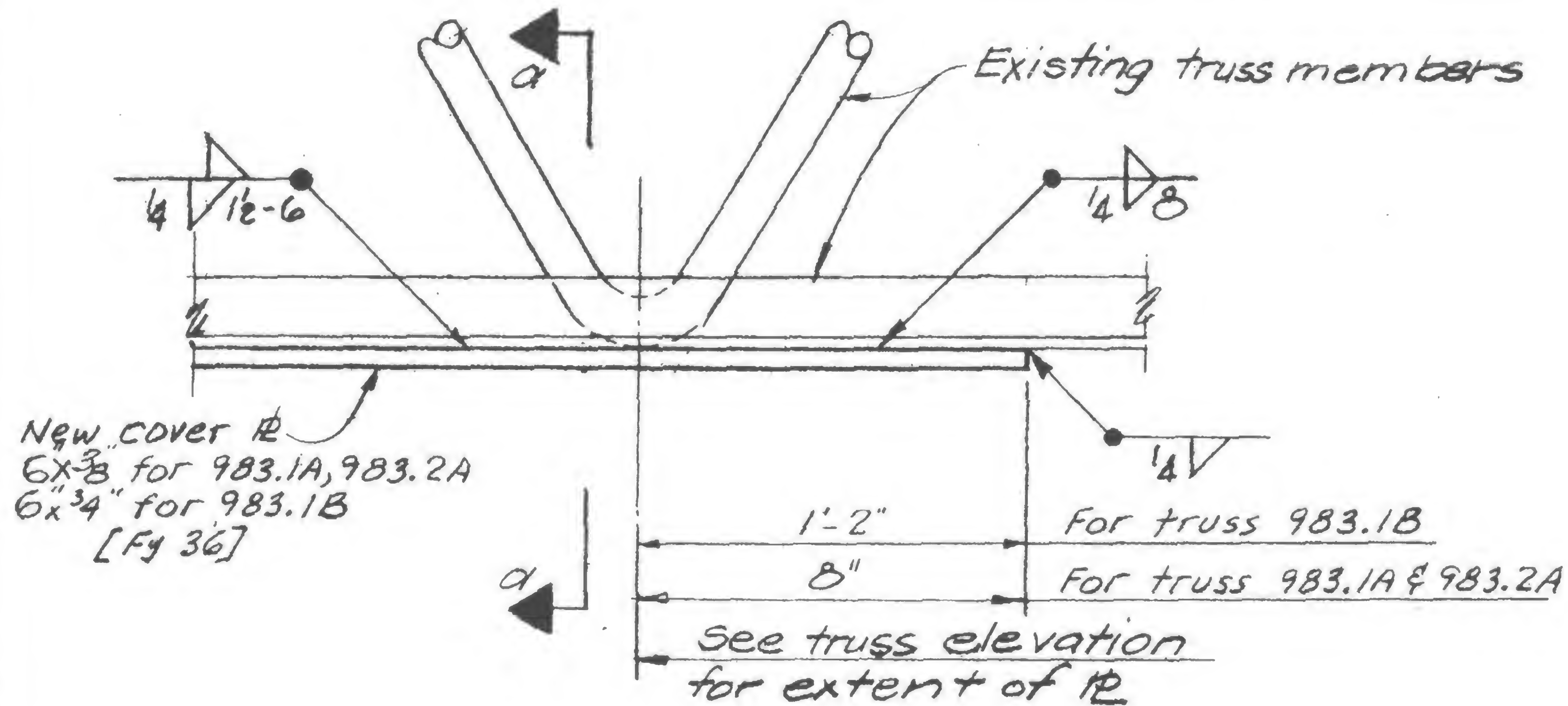
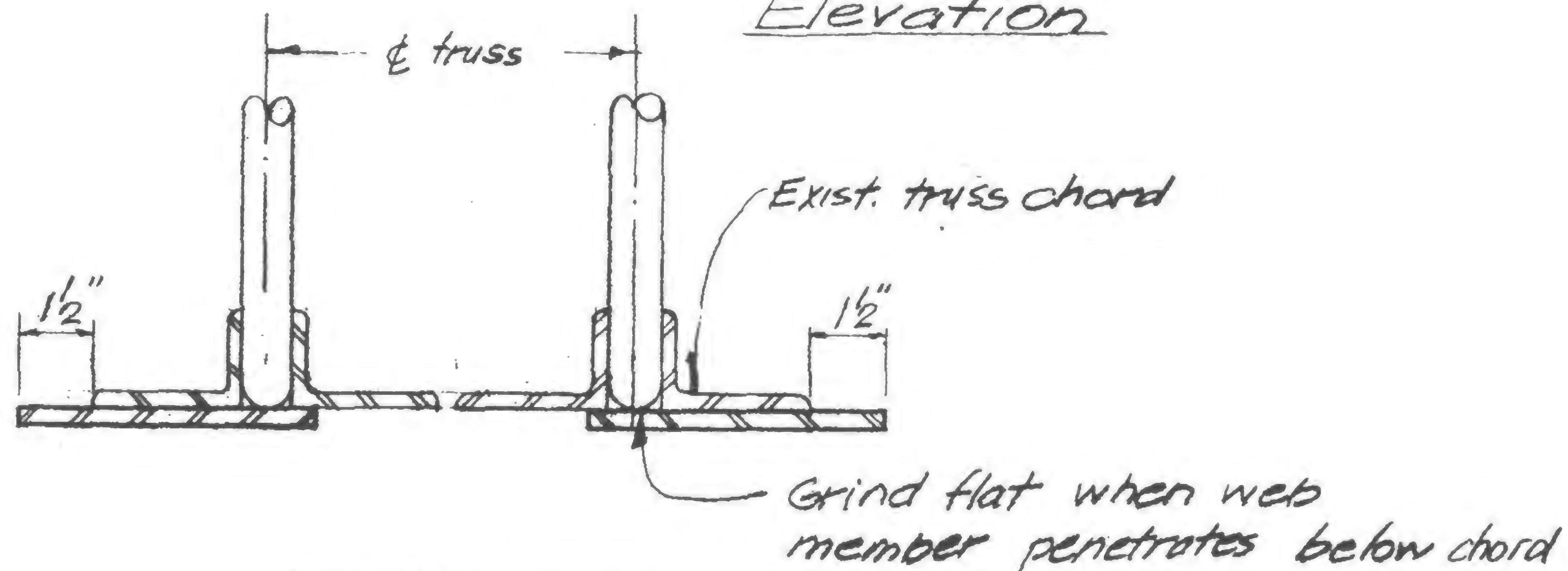
PROJECT THE WORLD TRADE CENTER TITLE TRUSS DETAILS - FL 106DATE 1/27/71

## REVISIONS

7/30/71

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5/9/79

ElevationSection a-aDETAIL 989A

DESIGNED

DRAWN

P. Orneli

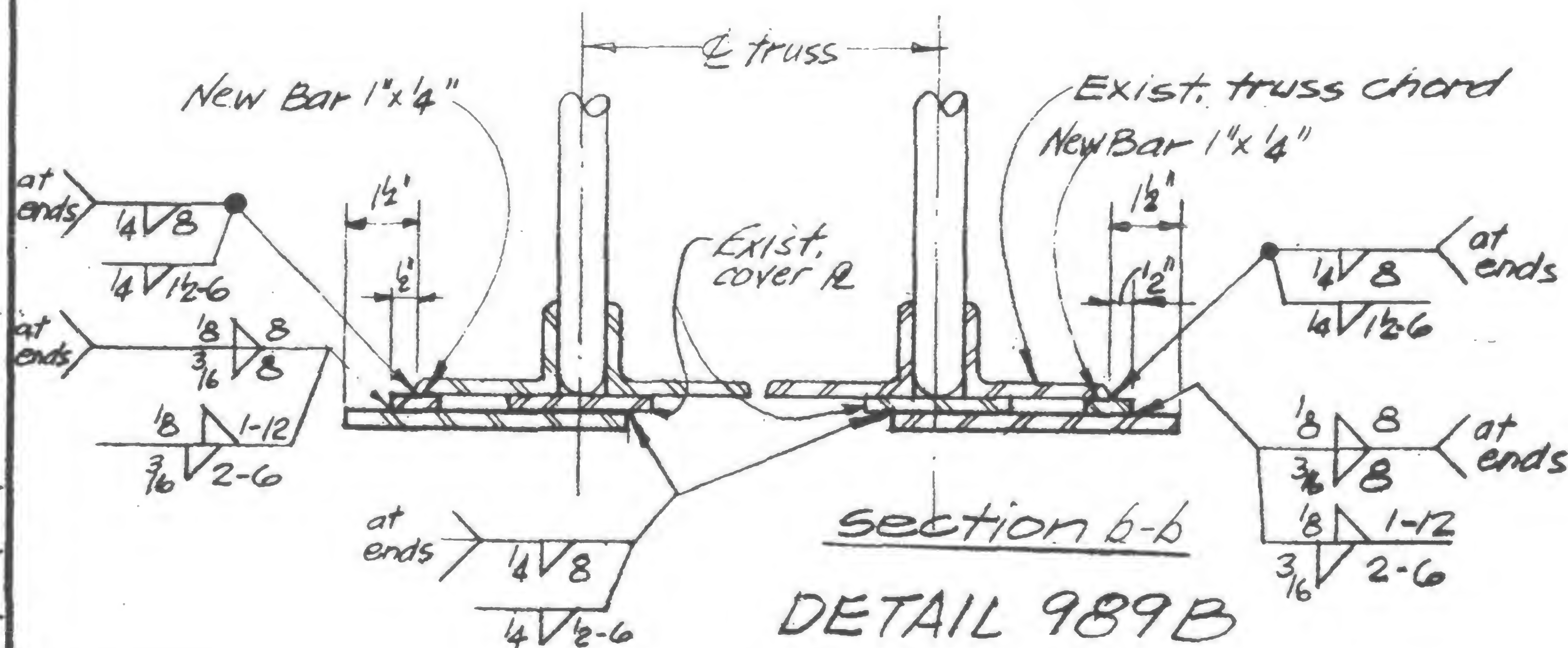
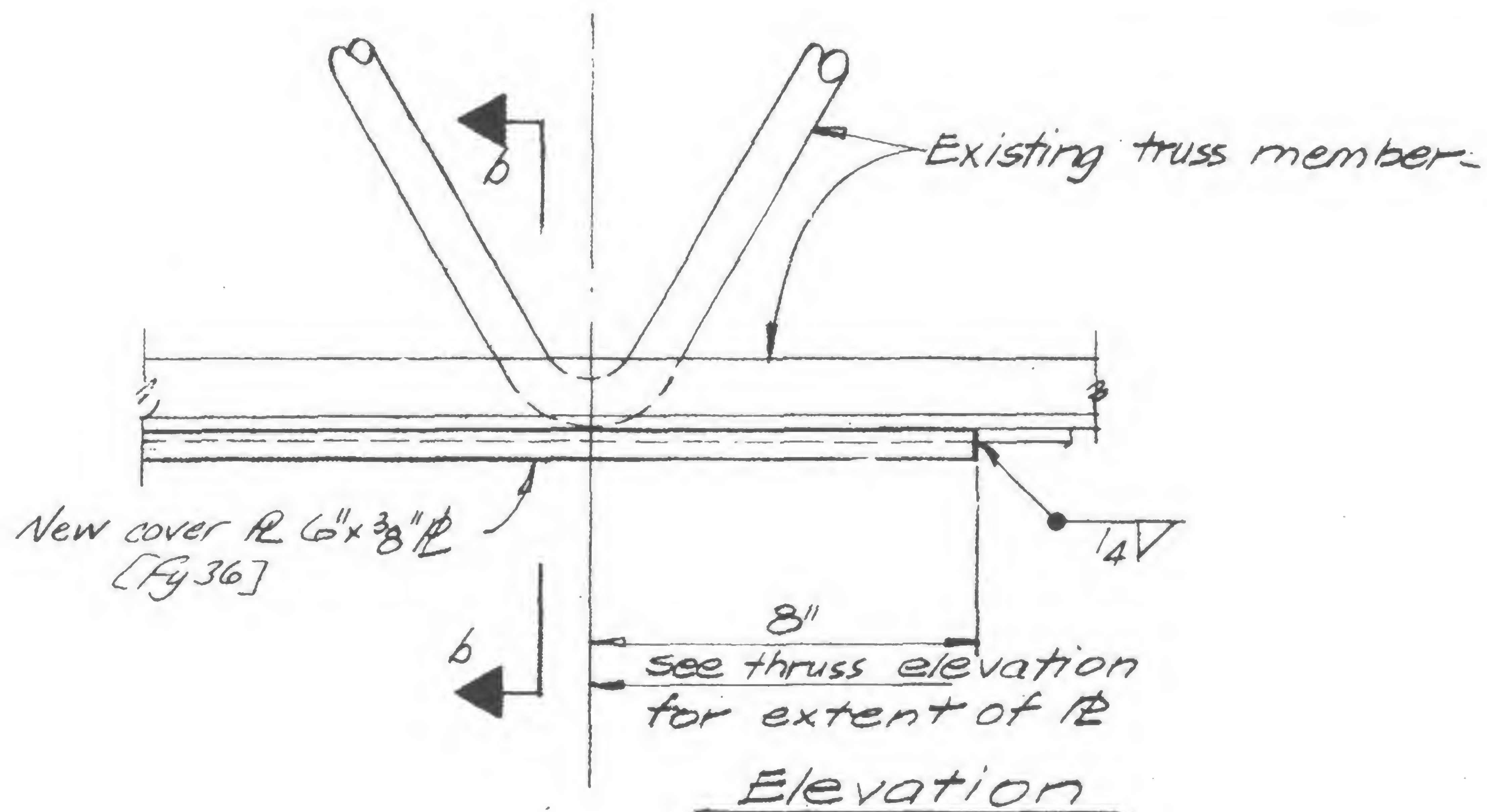
REVIEWED

1/27/71

19-A-9891



**KEYWORDS:**



**DESIGNED**

**DRAWN**

## REVIEWED

19-A-989.2



SKILLING, HELLE CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

WTC 447.00

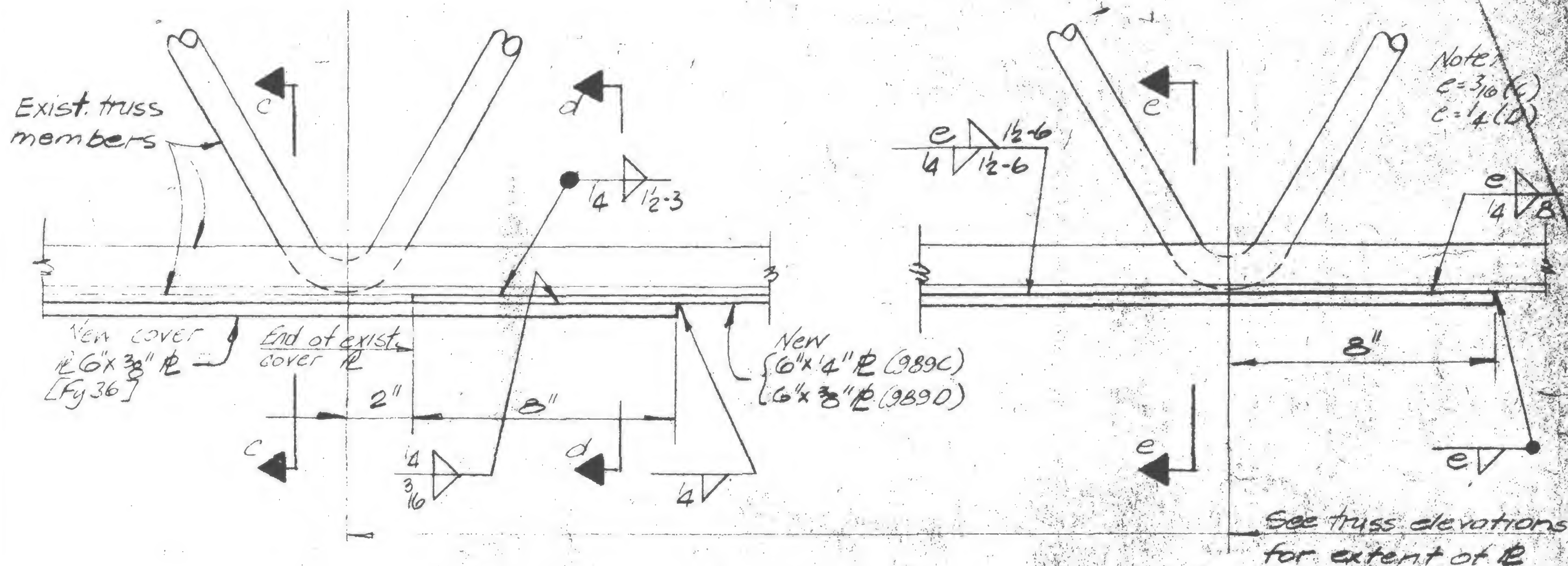
PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS - FL. 106

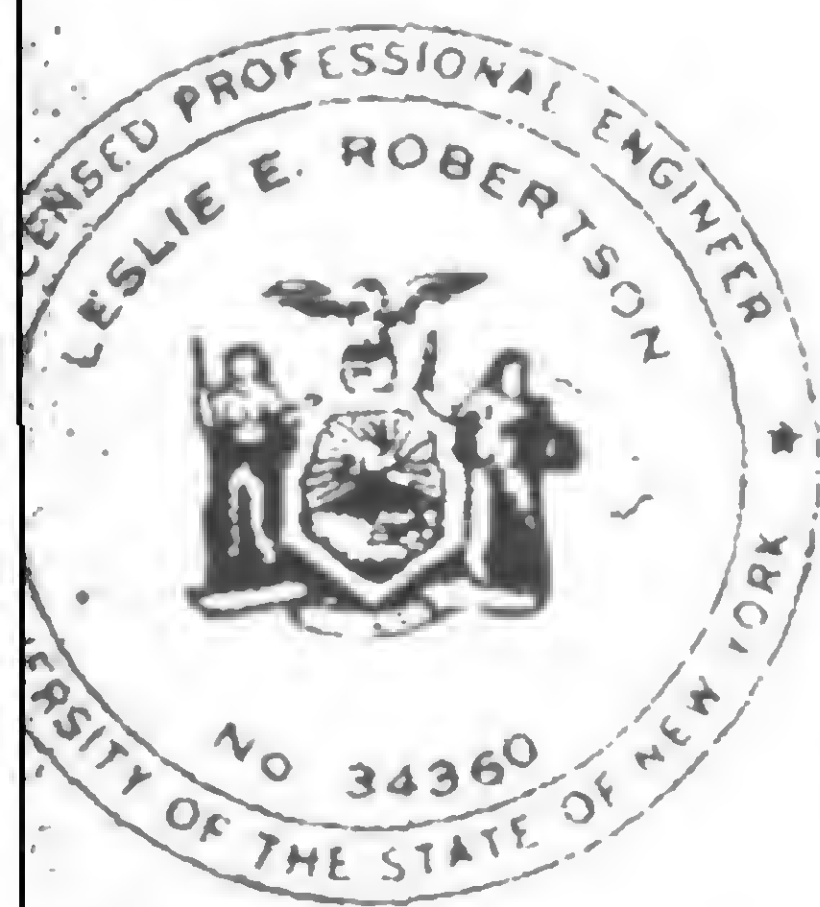
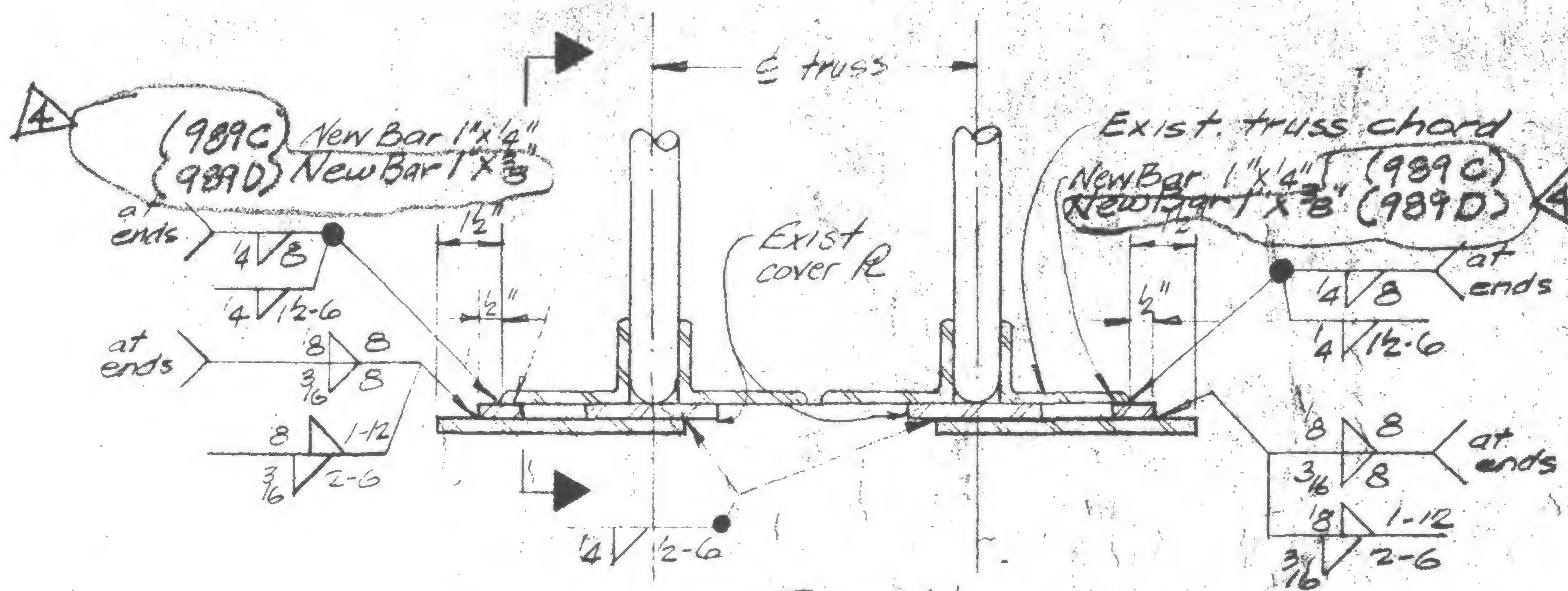
DATE 5/9/79

REVISIONS

11-30-79



Elevation



DRAWN

P. Owen

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19-A-989.3



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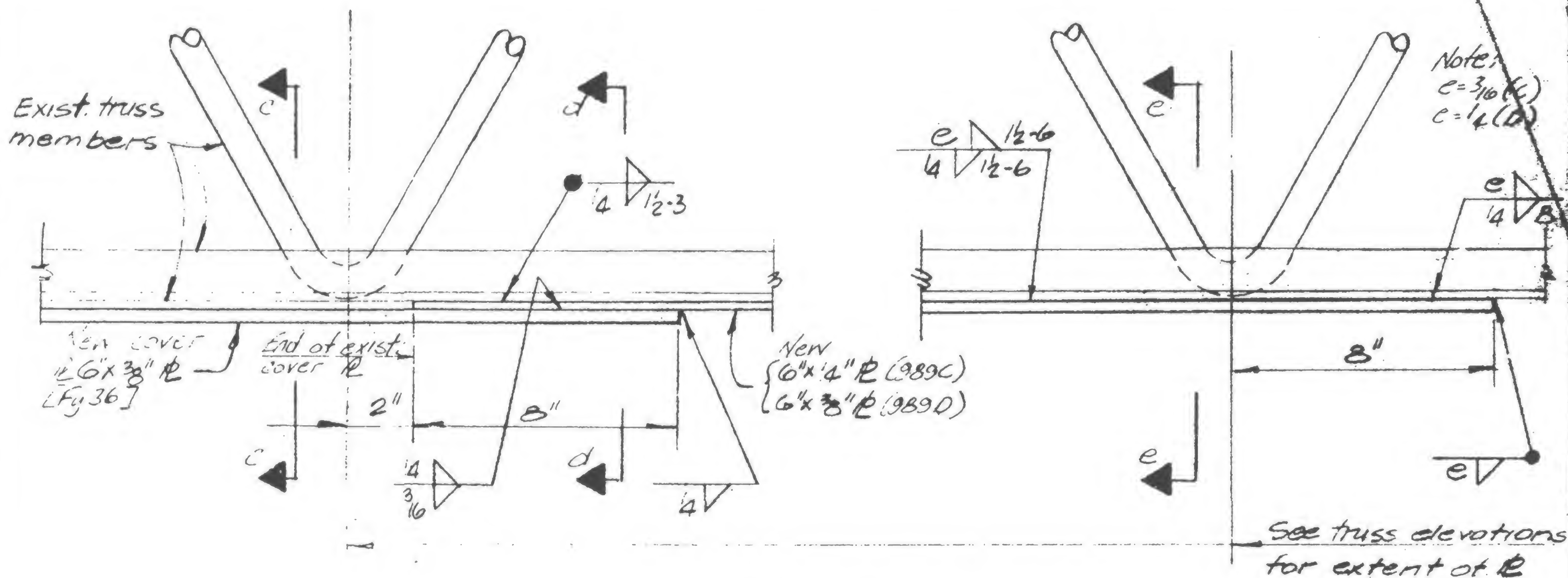
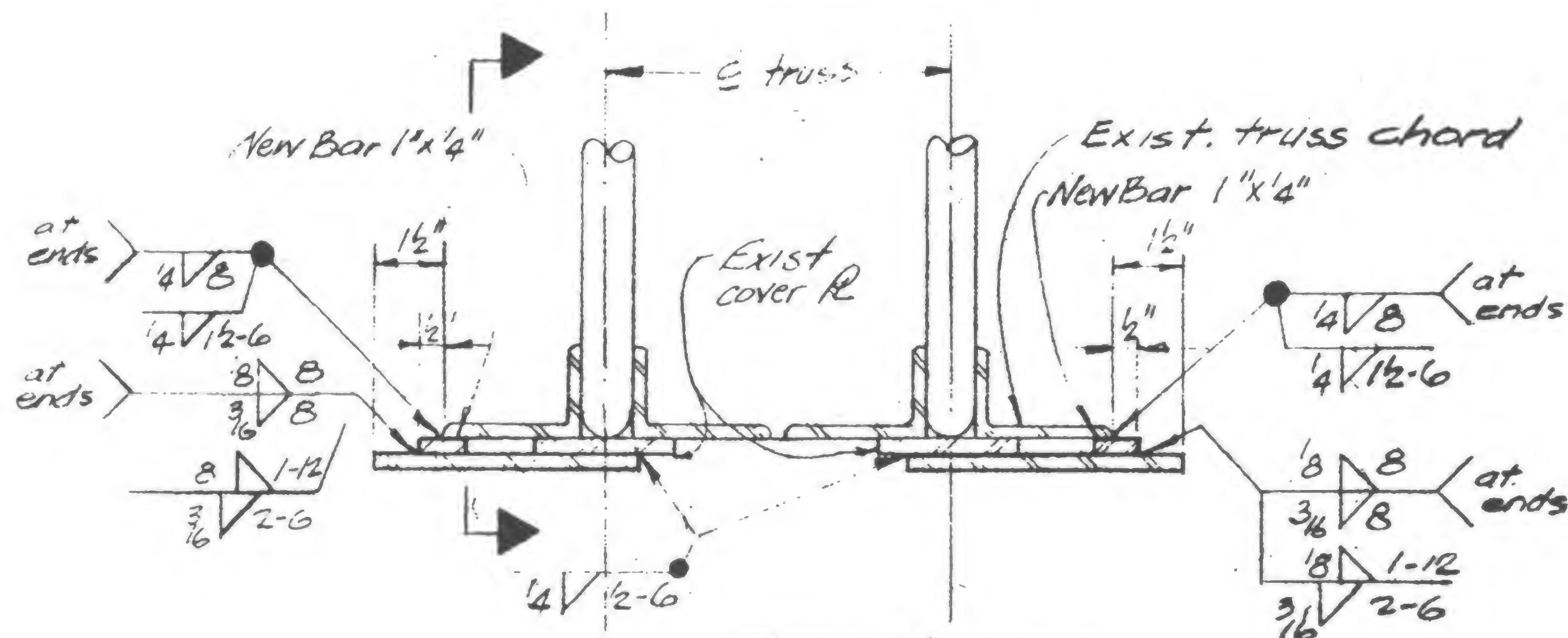
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TRUSS DETAILS - FL. 106

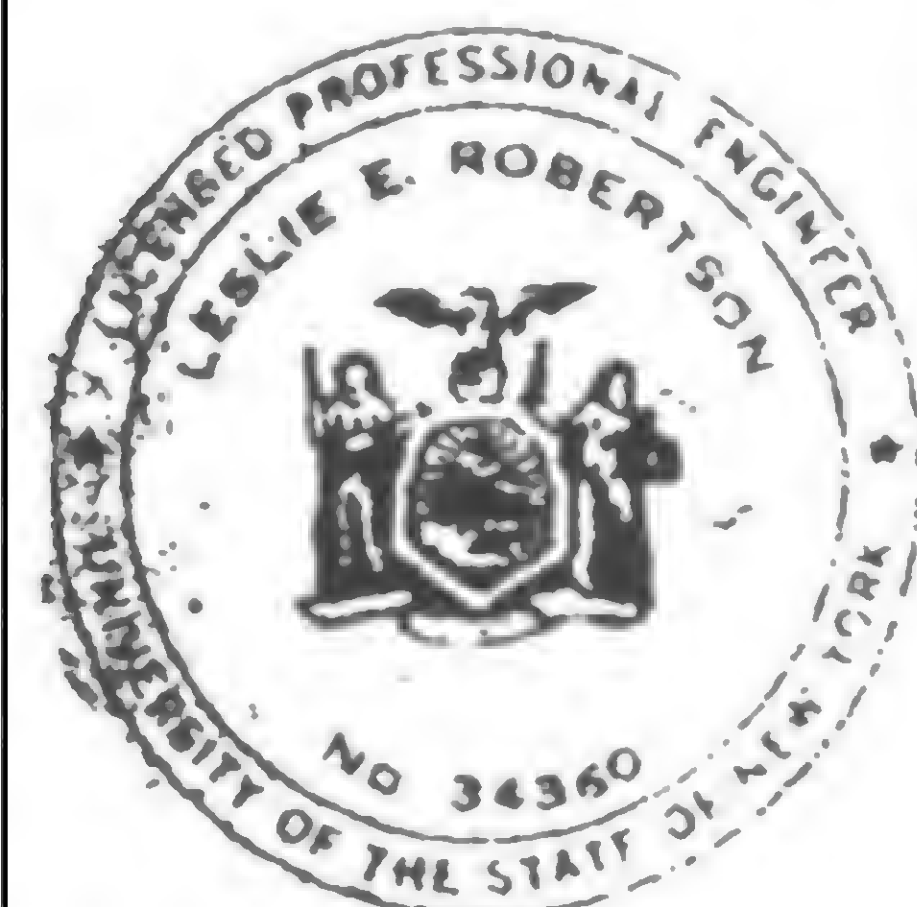
DATE

5/9/79

## REVISIONS

ElevationSection c-c  
DETAIL 989 C & D

19-A-989.3



SIGNED

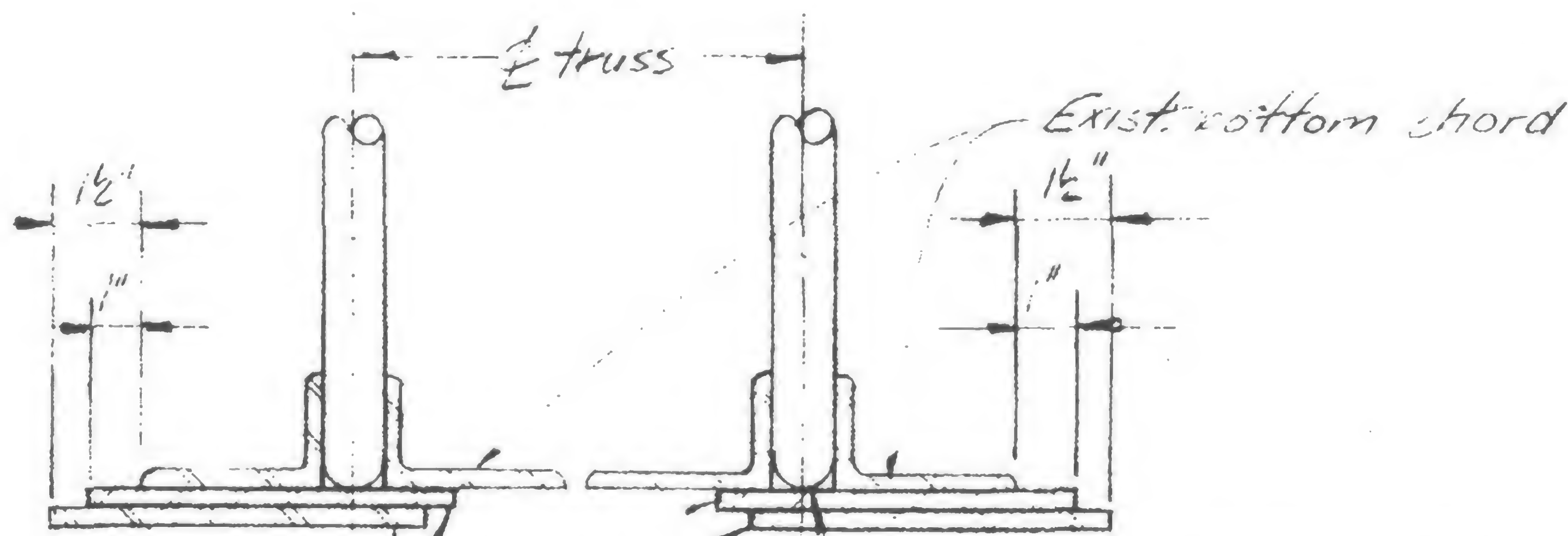
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REVIEWED

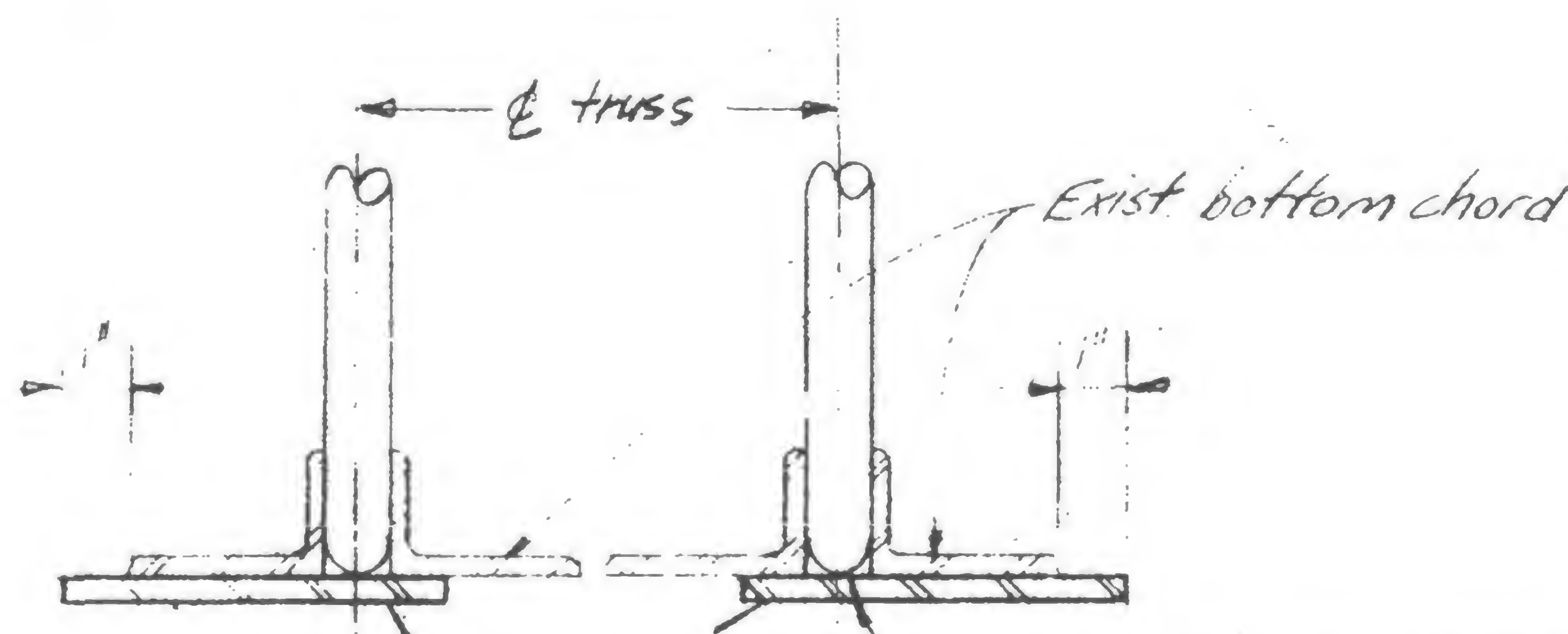
WAB



REVISIONS



section d-d



section e-e



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DRAWN

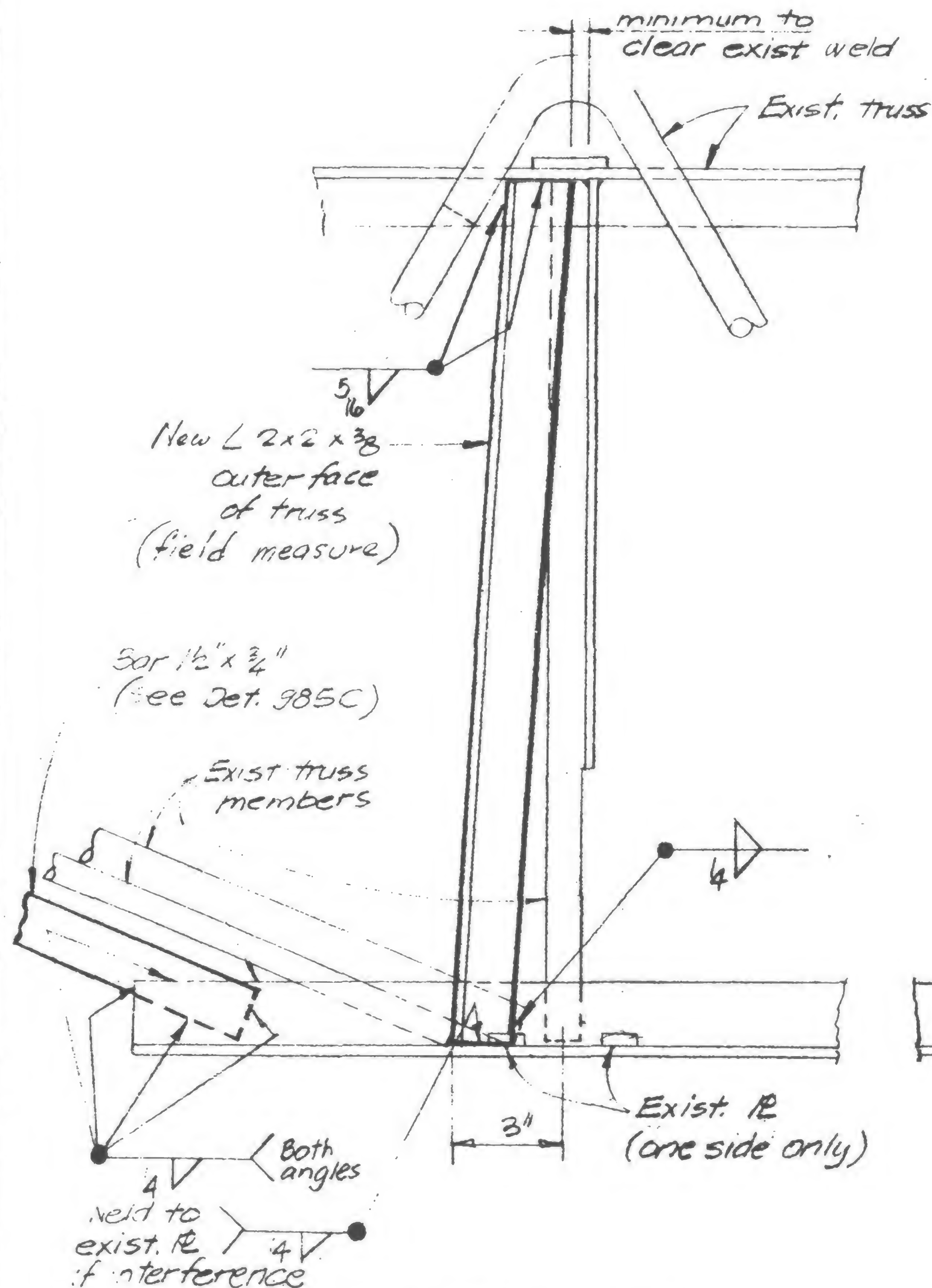
K. O'Neil

REVIEWED

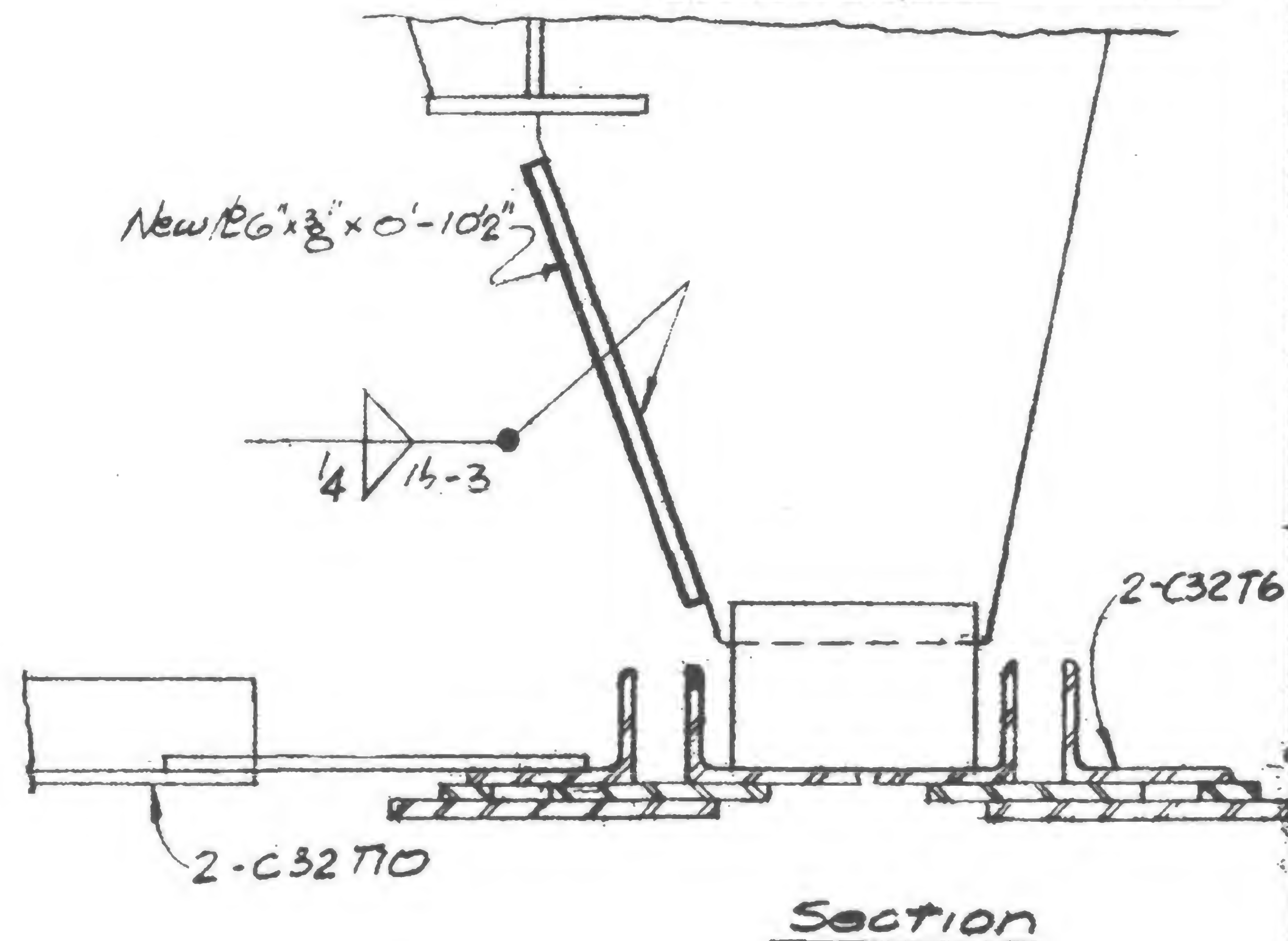
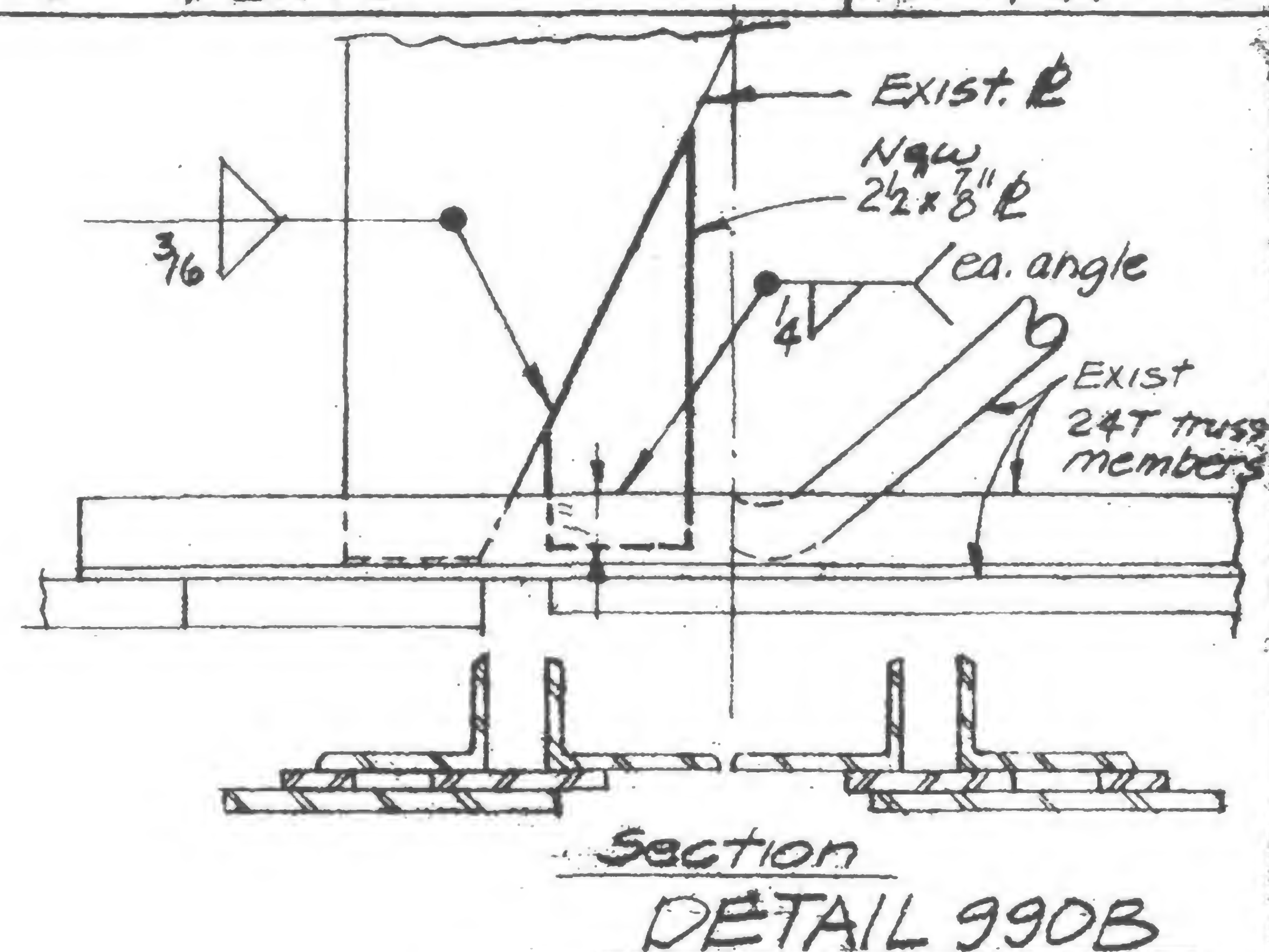
W. O'Neil



REVISIONS



DETAIL 990A



For Notes see 19-A-985.1

19-A-990.1



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DRAWN

REVIEWED

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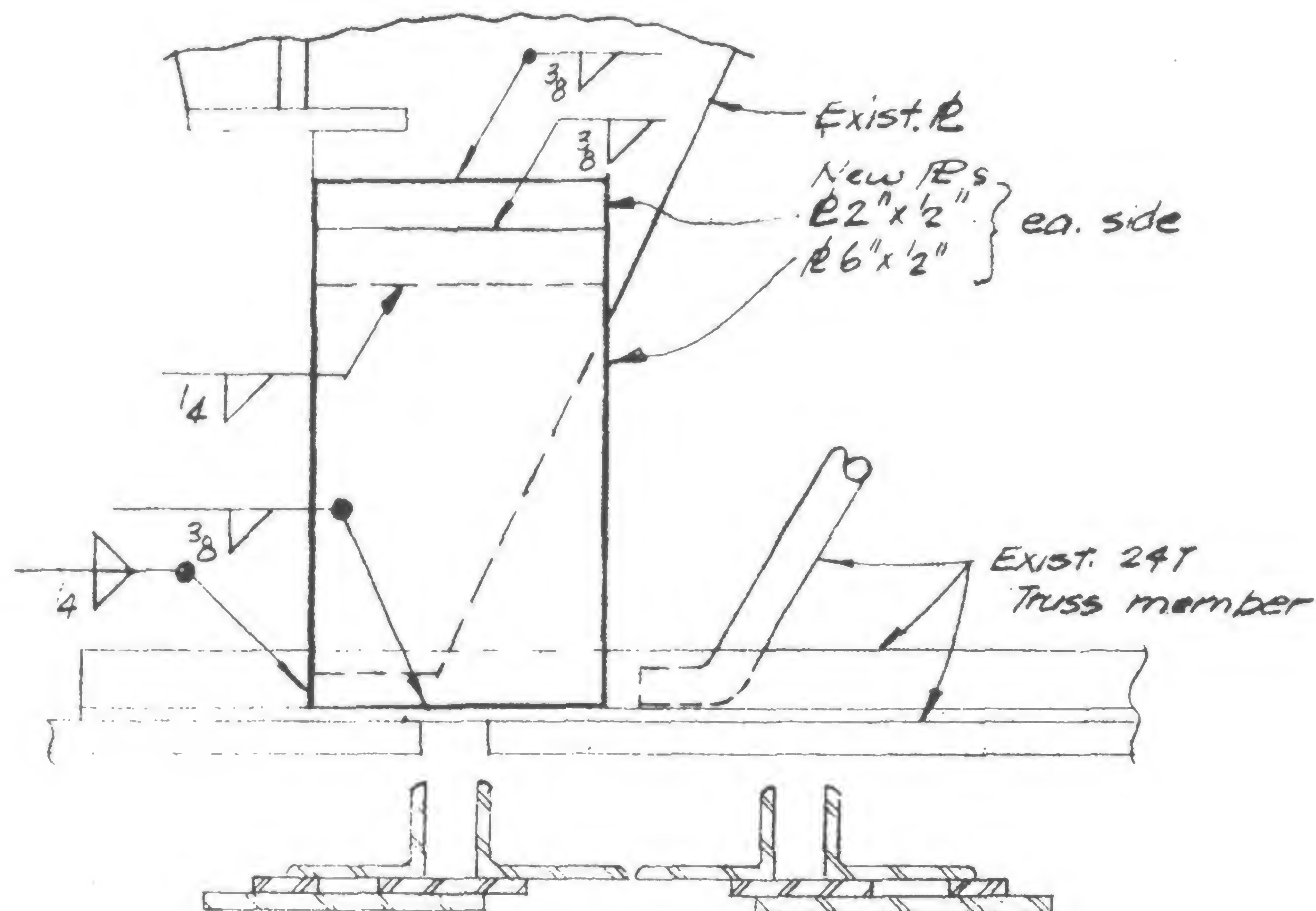
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

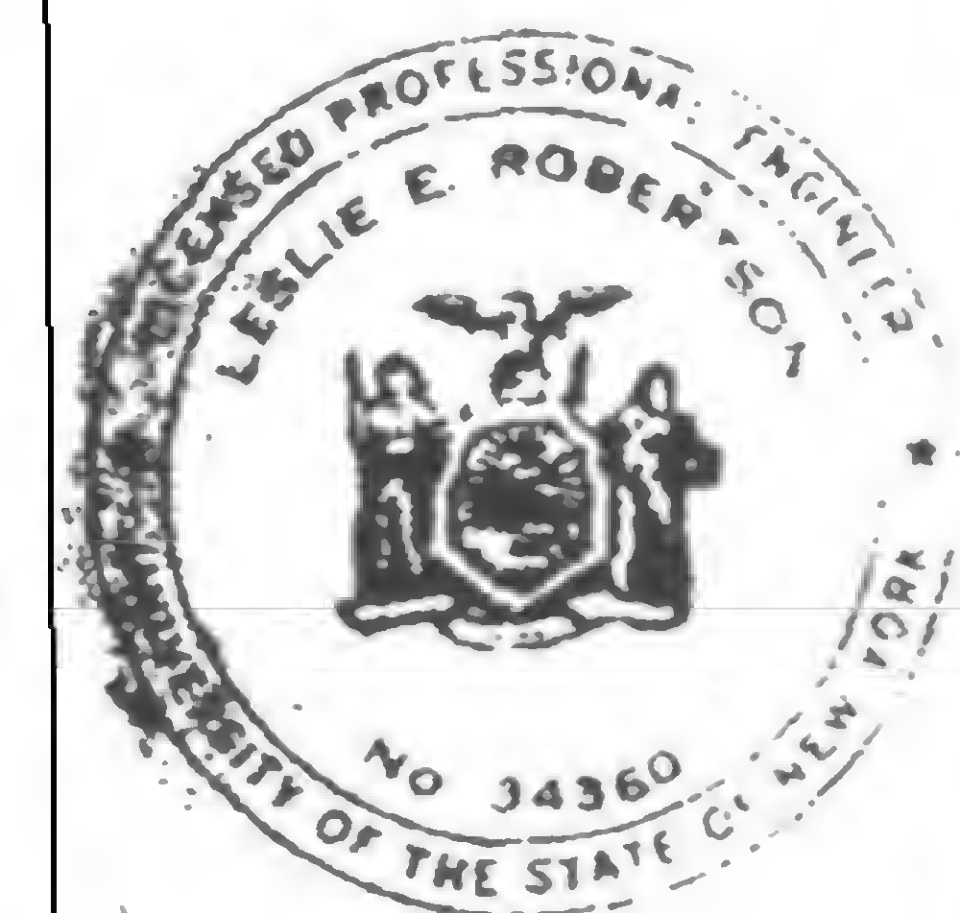
TITLE TRUSS DETAILS - FL. 106

DATE 5/9/79

REVISIONS



Section  
DETAIL 990D



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DRAWN

*[Signature]*

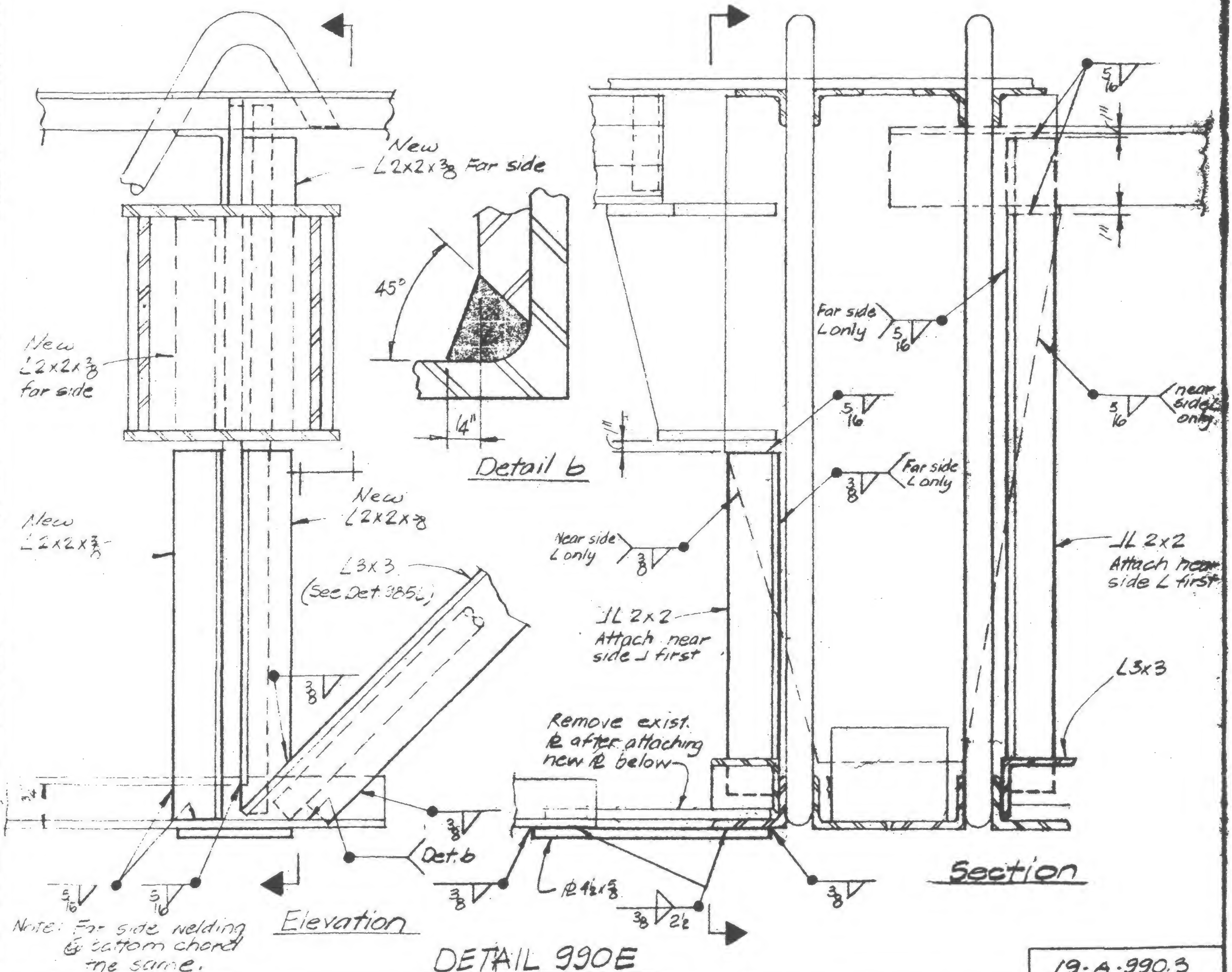
REVIEWED

*[Signature]*

19-A-990.2



REVISIONS



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DRAWN ON 11/11/79

REVIEWED

WEB

19-A-990.3



PROJECT

THE WORLD TRADE CENTER

TITLE

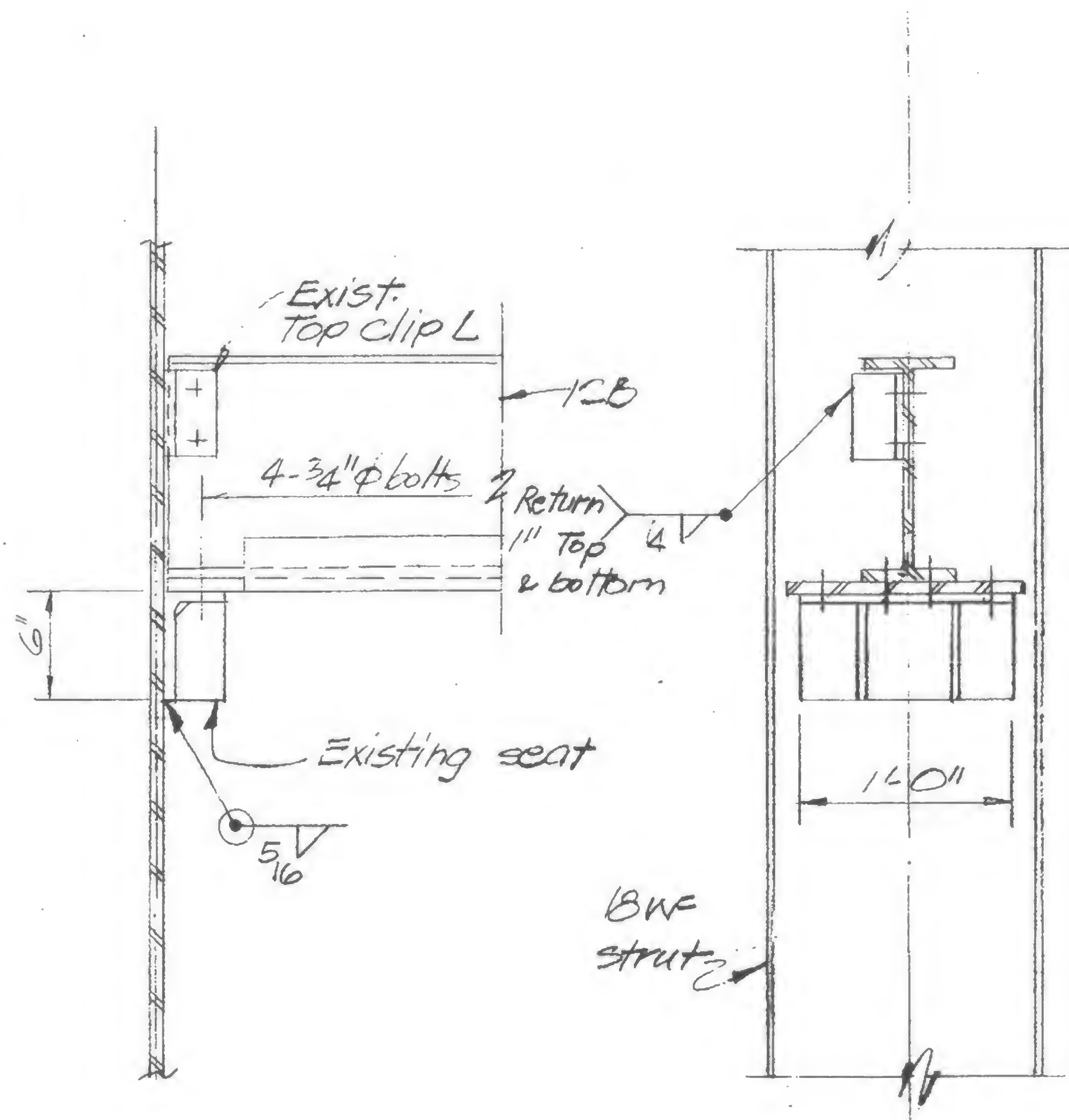
LOUVER

SUPPORT REPAIRS - FL. 108

DATE

2/5/71

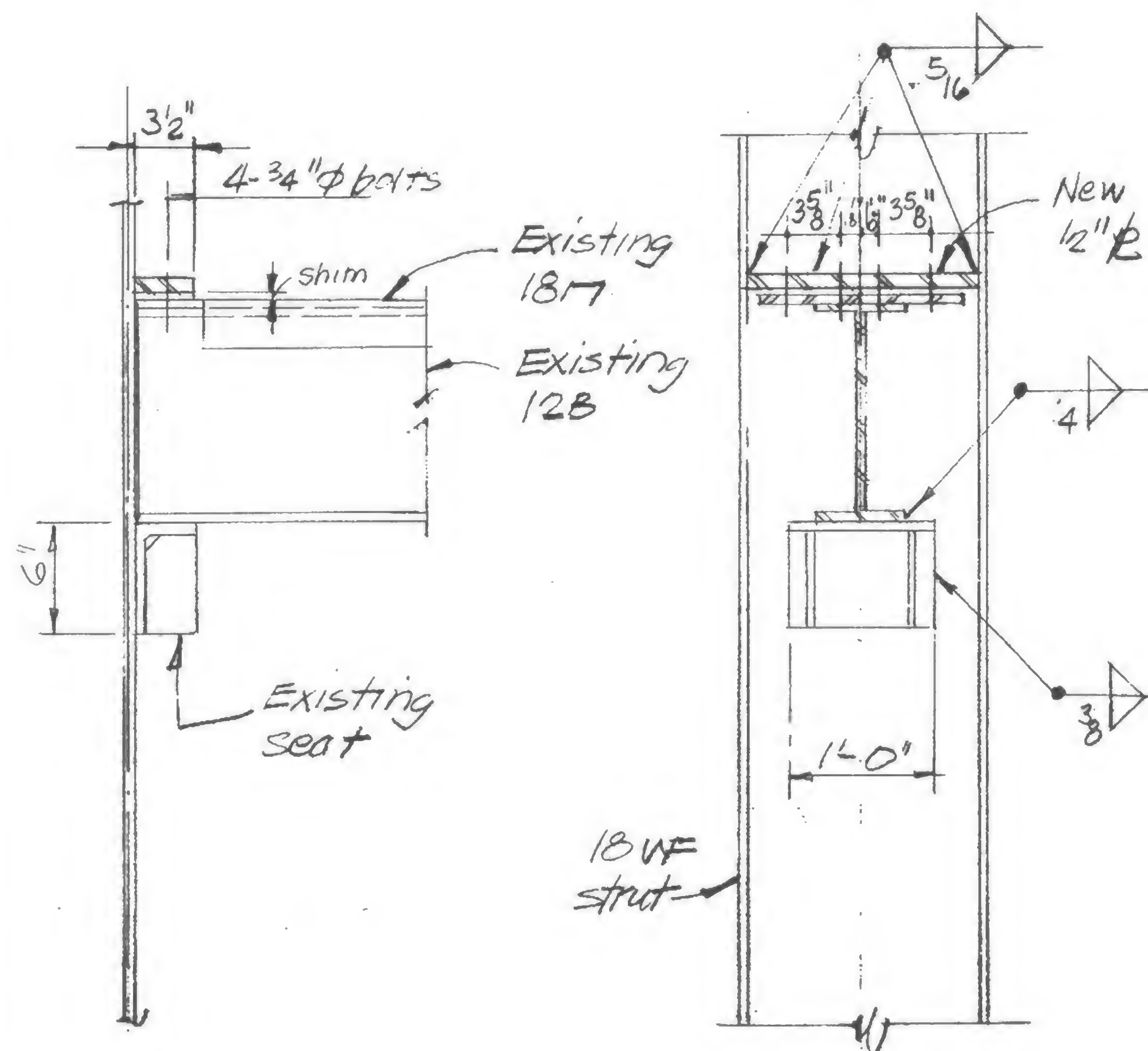
## REVISIONS



Remove existing connection material, relocate beam and reweld existing connection material to 18WF strut.

### Detail 991A

See 9-AB9-1, 9-AB9-2.1, 9-AB9-3, 9-AB9-4.1 for location. Typical Detail 991A thru 991E



Remove existing connection material, rotate channel beam, assemble to position indicated in elevation, reweld existing connection material to 18WF strut and install new material as indicated.

### Detail 991B

19-A-991.1



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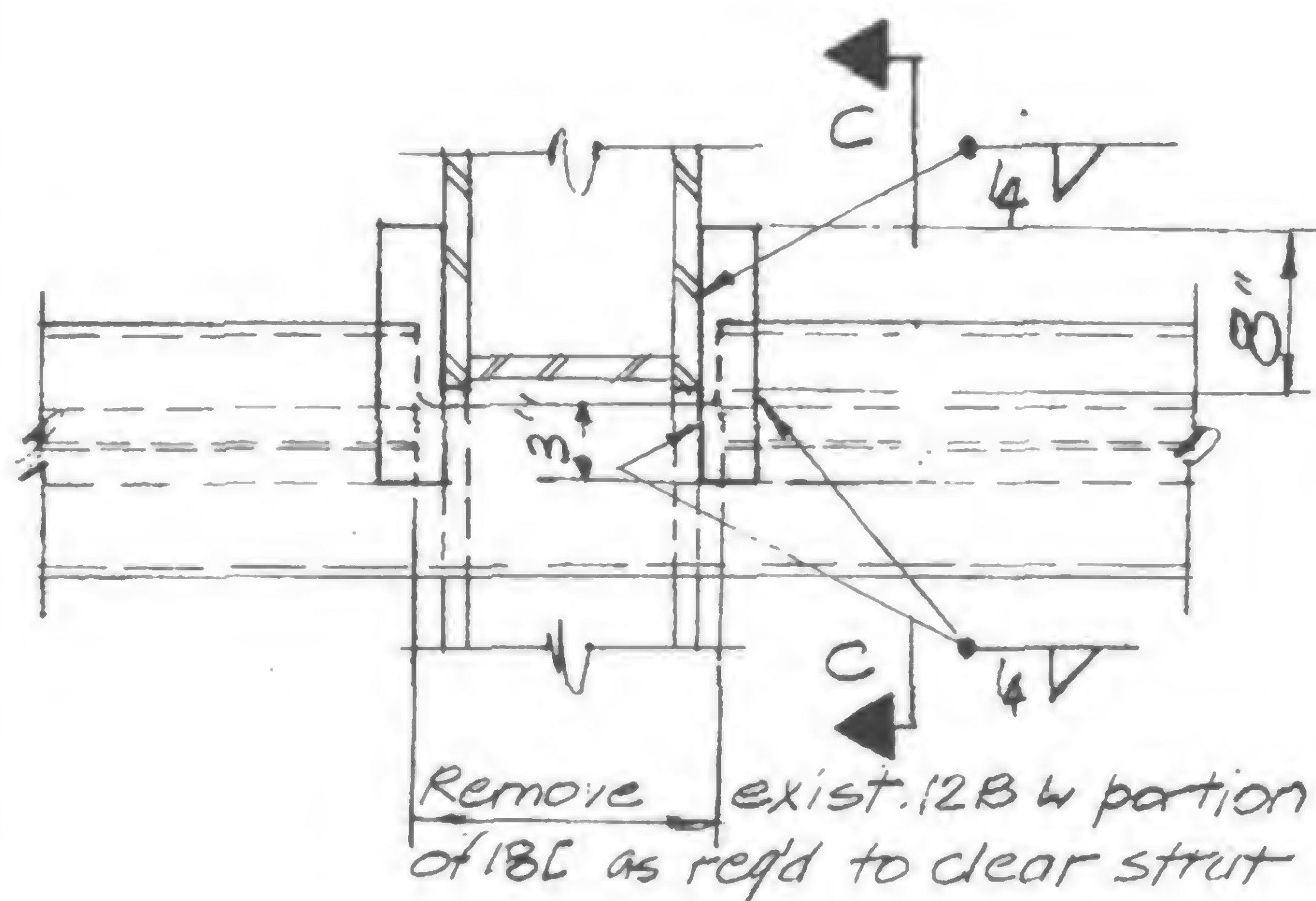
DRAWN

P. O'Brien

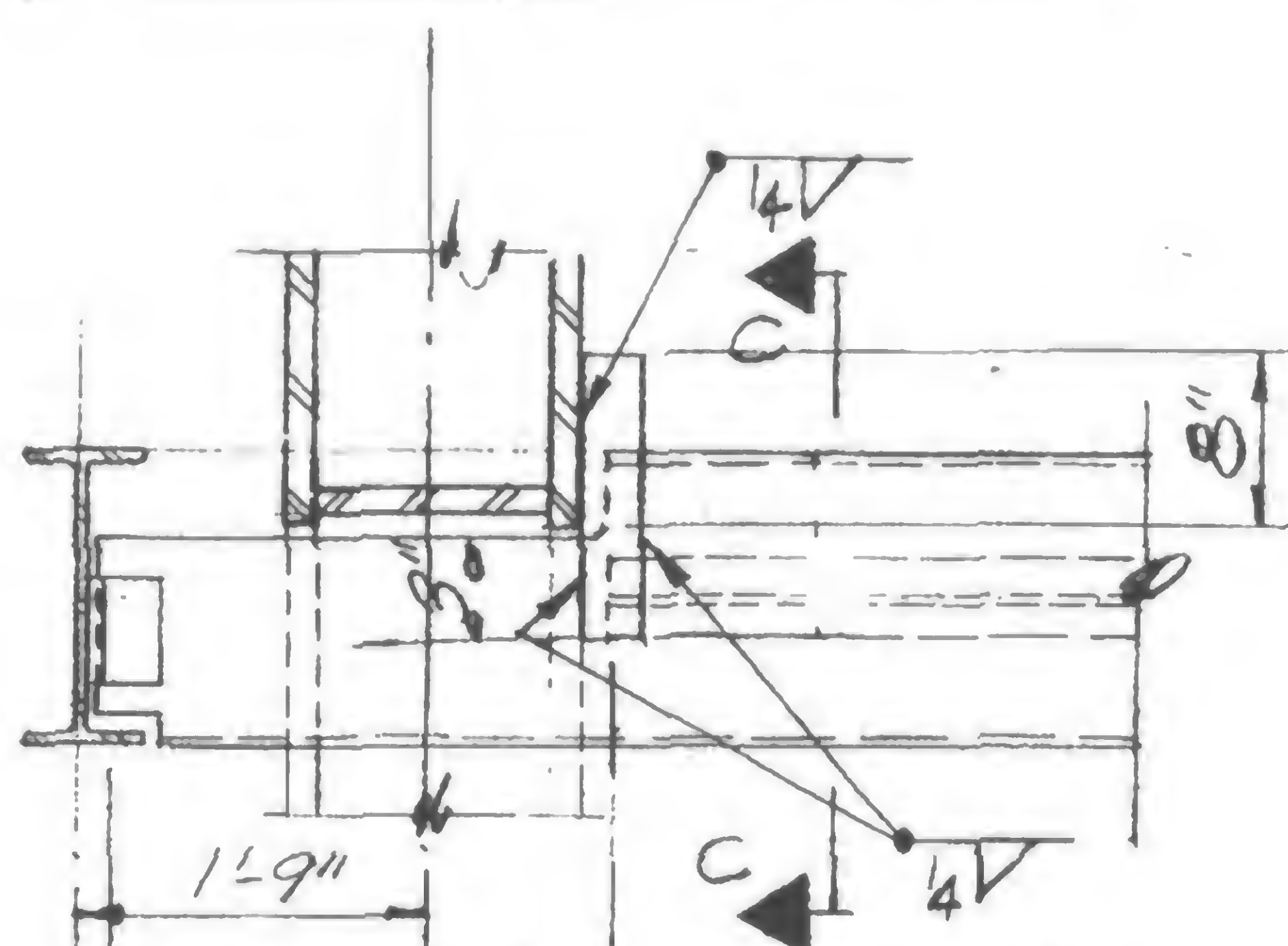
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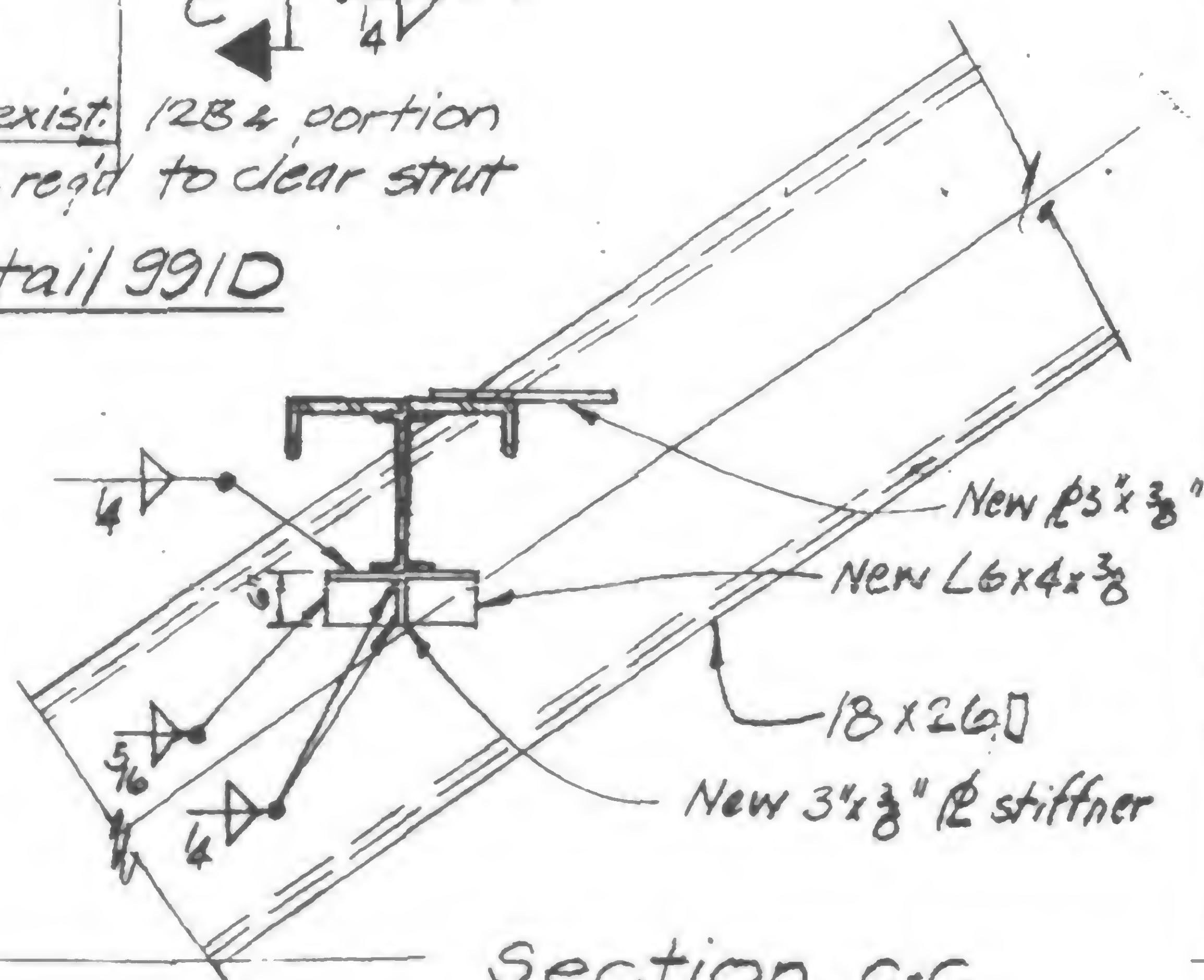
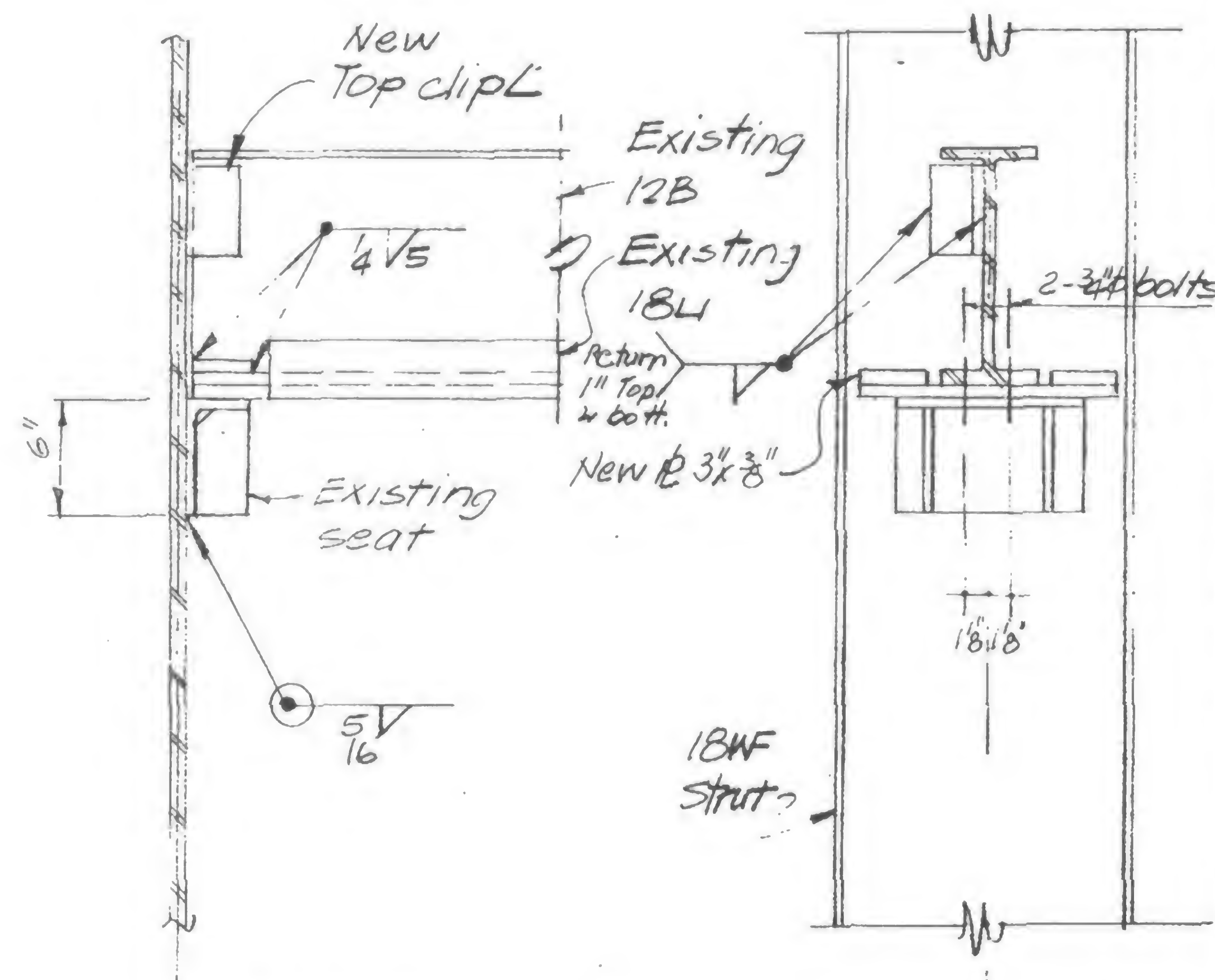
## REVISIONS



Plan Detail 991C



Plan Detail 991D

Section c-c  
Detail 991C & D

Remove existing connection material, relocate and reweld, rotate existing channel beam assembly and reinstall.

Detail 991E



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DRAWN

R. Orelli

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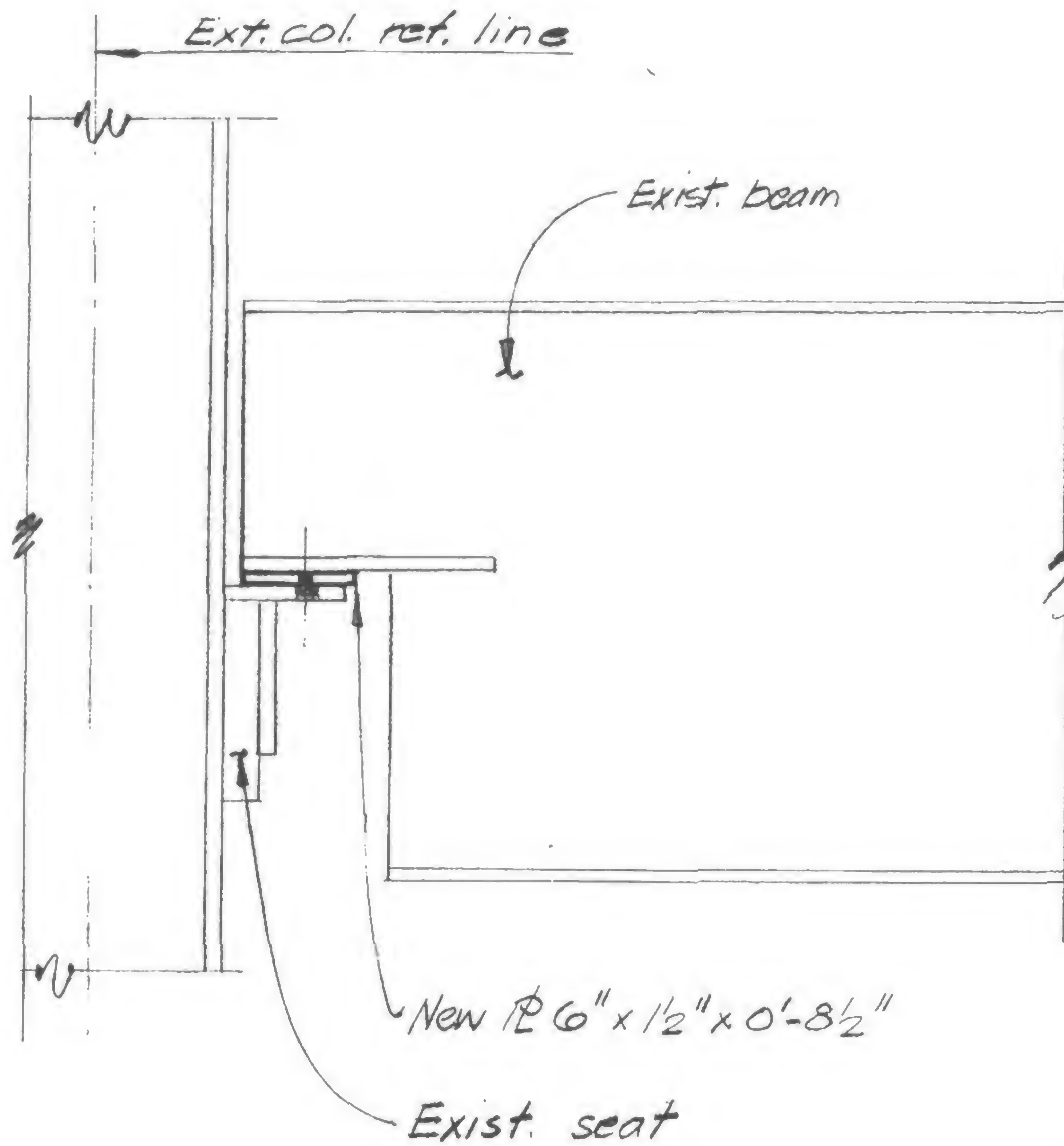
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

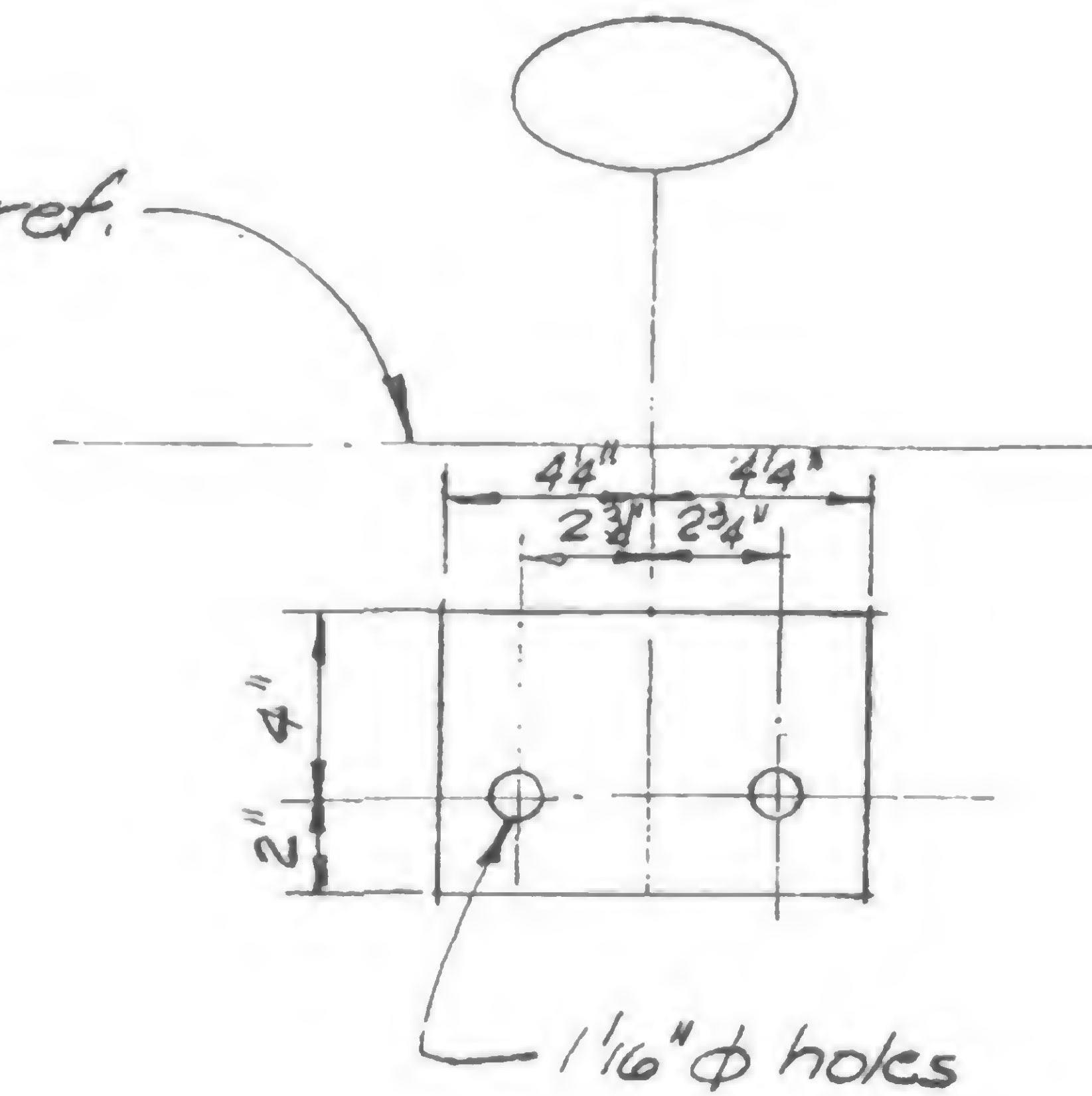
TITLE BEAM SEAT REPAIR TOWER B FLOOR 107

DATE 3-15-71

REVISIONS



Ext. col. ref. line



Plan of #

Detail 992A ~ 992B  
See SB-115 for location.



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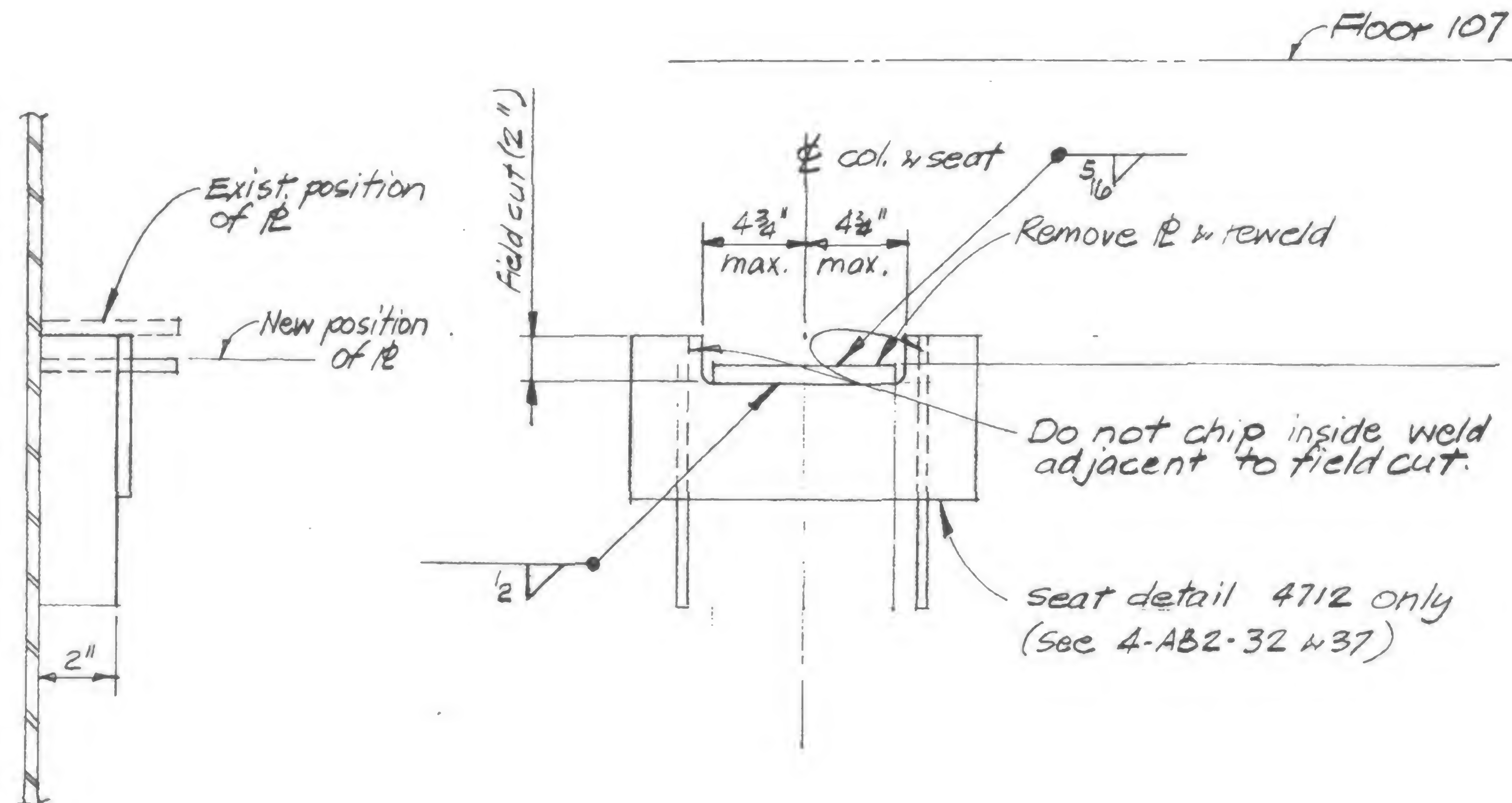
DRAWN P. Ozelen

REVIEWED

19-B-992



REVISIONS



Detail 993-A  
See SB-115 for location



DESIGNED WAB

DRAWN R. O'Connell

REVIEWED

19-B-993



PROJECT

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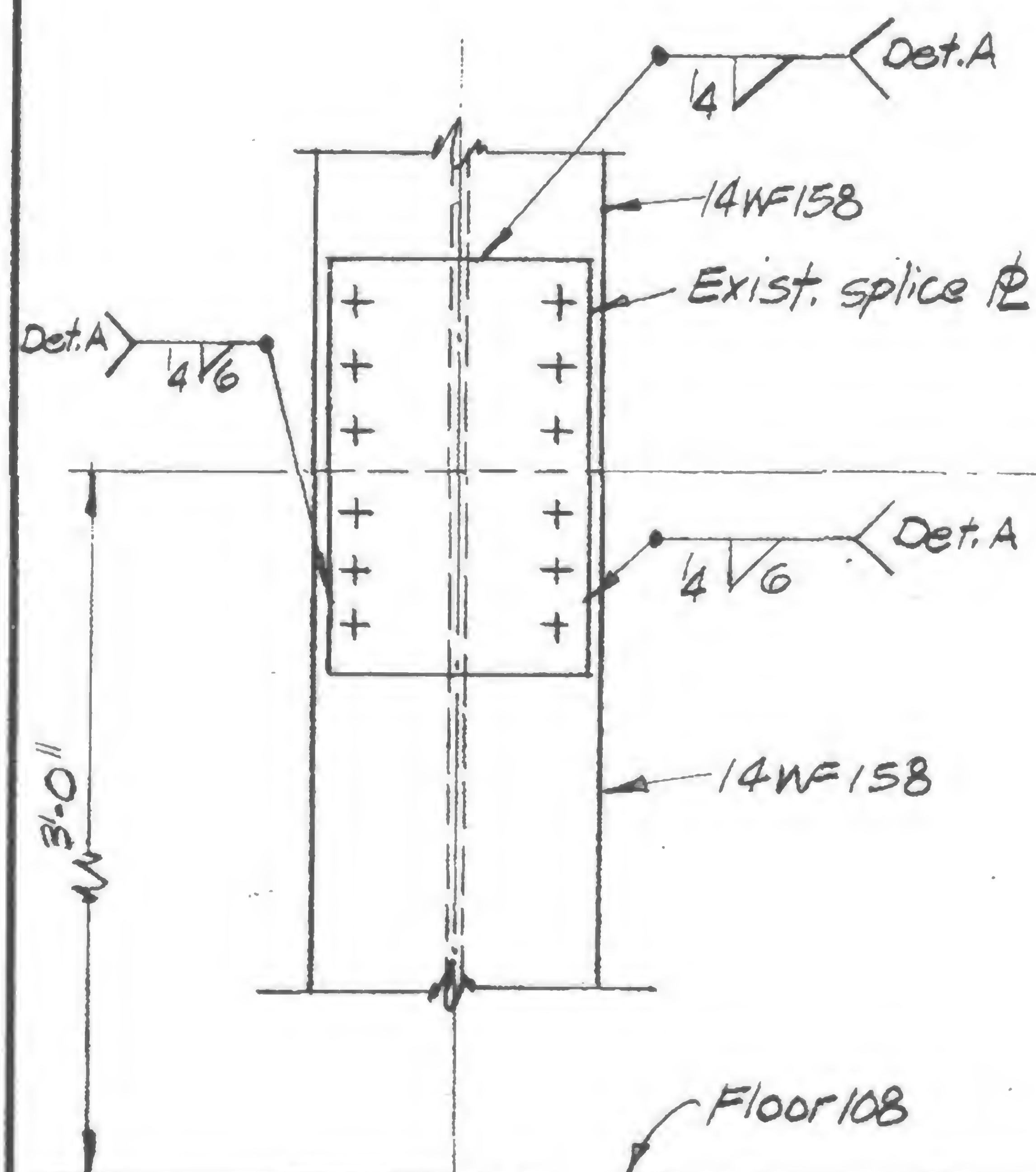
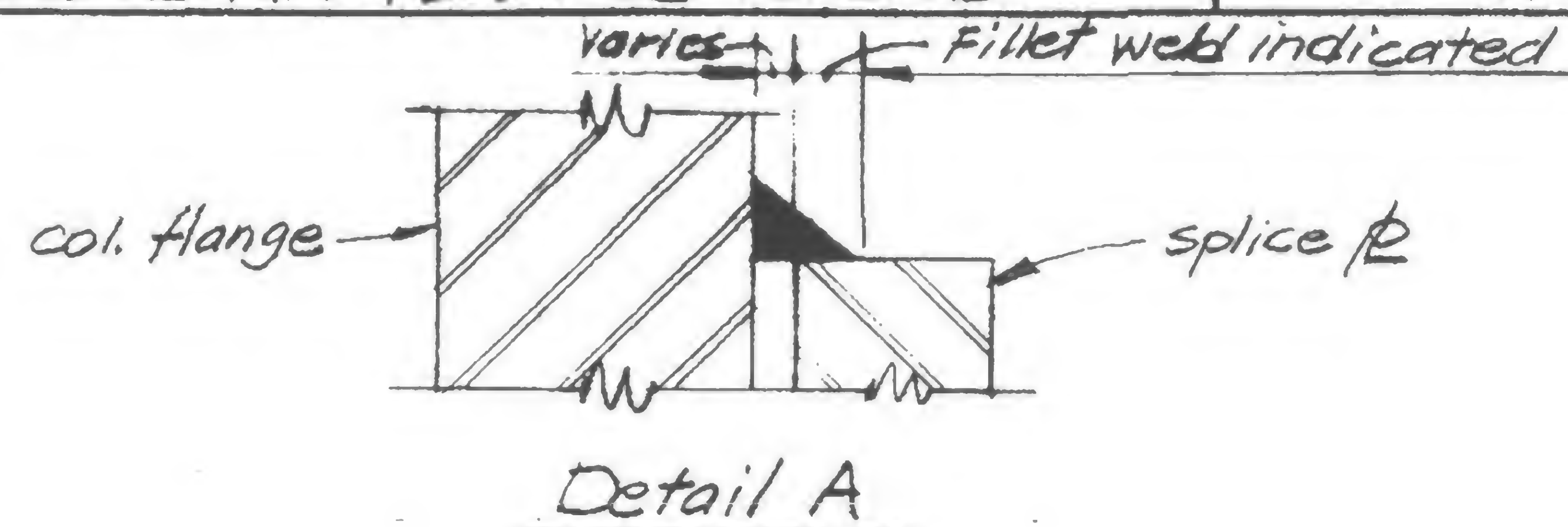
TITLE

COLUMN SPICE REPAIR - FLOOR 108 TOWER B

DATE

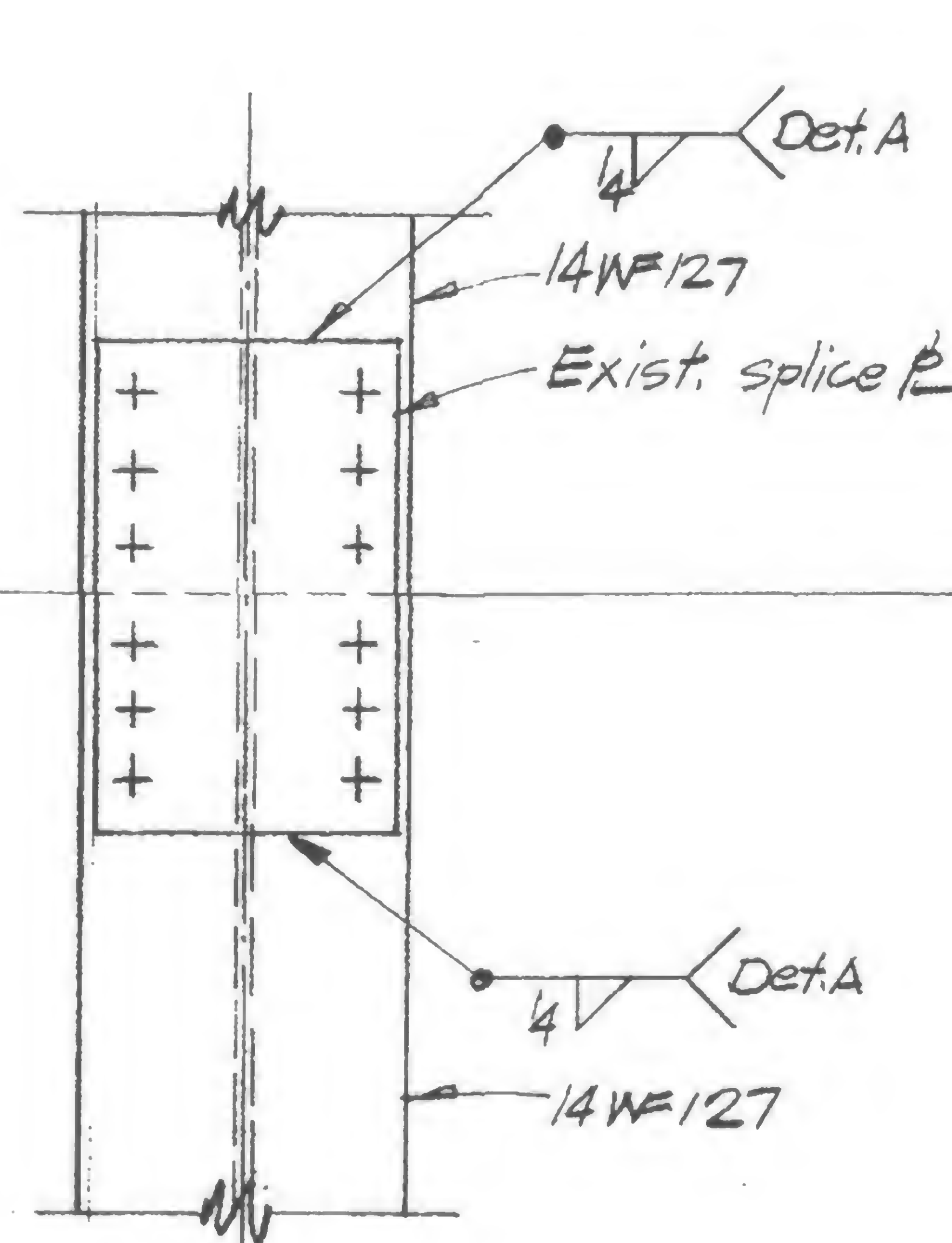
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REVISIONS



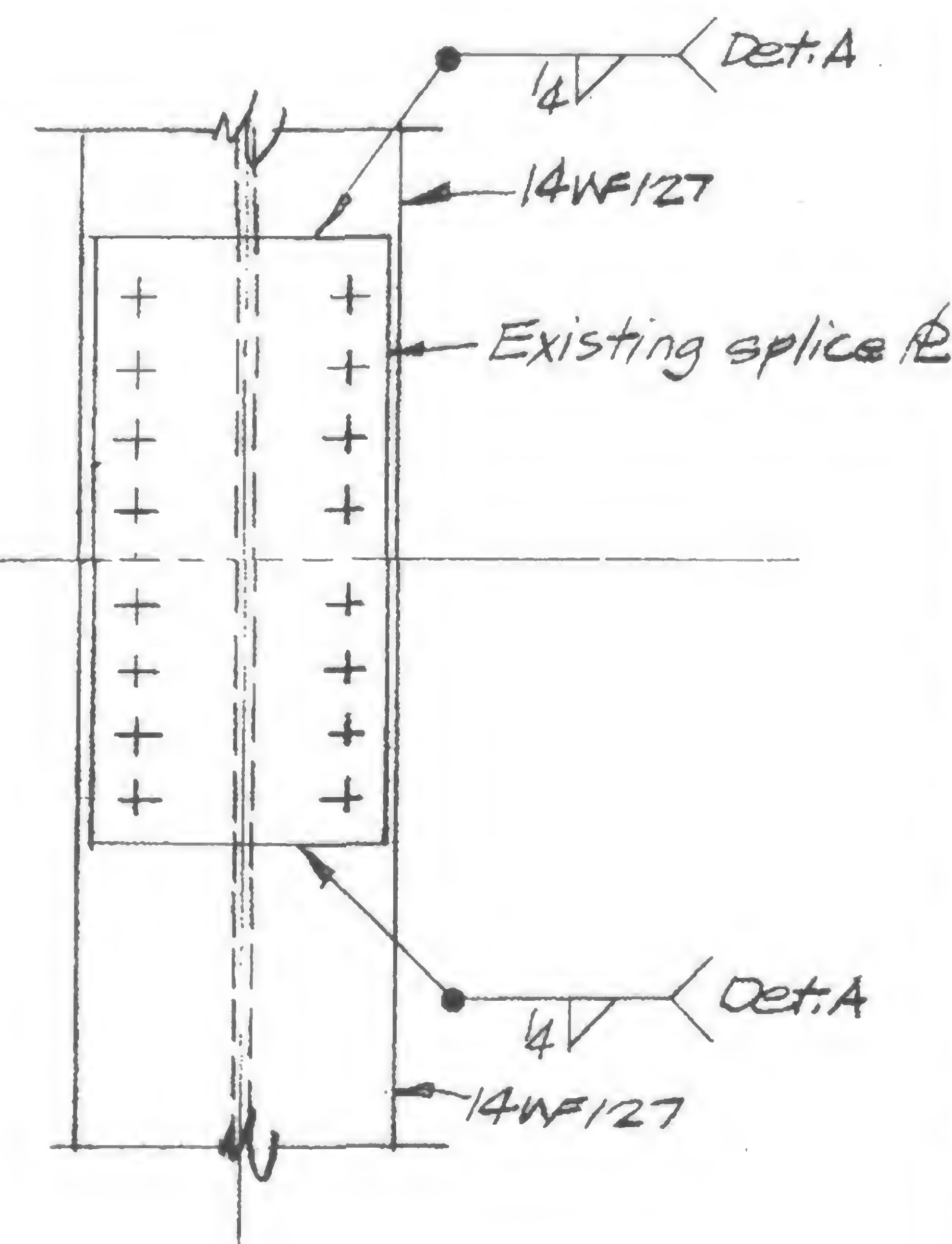
Detail 994A

cols. 502, 503, 506, 507  
1002, 1003, 1006, 1007



Detail 994B

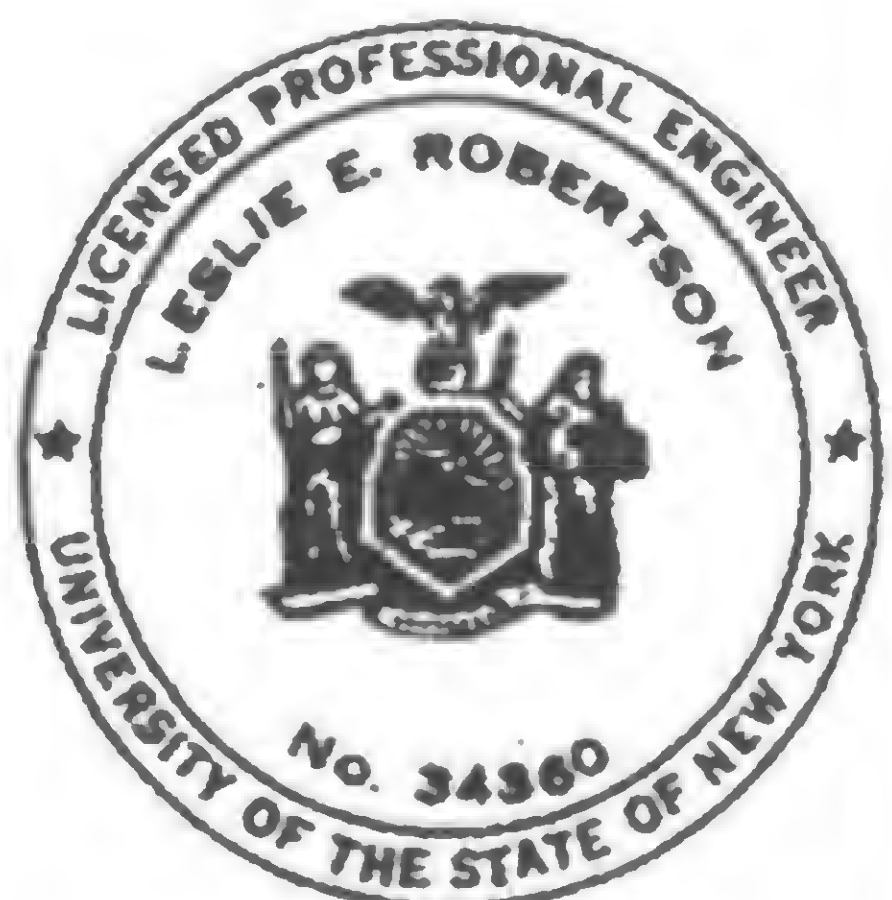
cols. 601, 608  
901, 908



Detail 994C

cols. 602, 603, 606, 607  
902, 903, 906, 907

Note: 1. All bolts must be torqued prior to weld being installed.  
2. Welding shall be accomplished using E70xx electrodes.  
3. See SB-401 & SB-402 for location.



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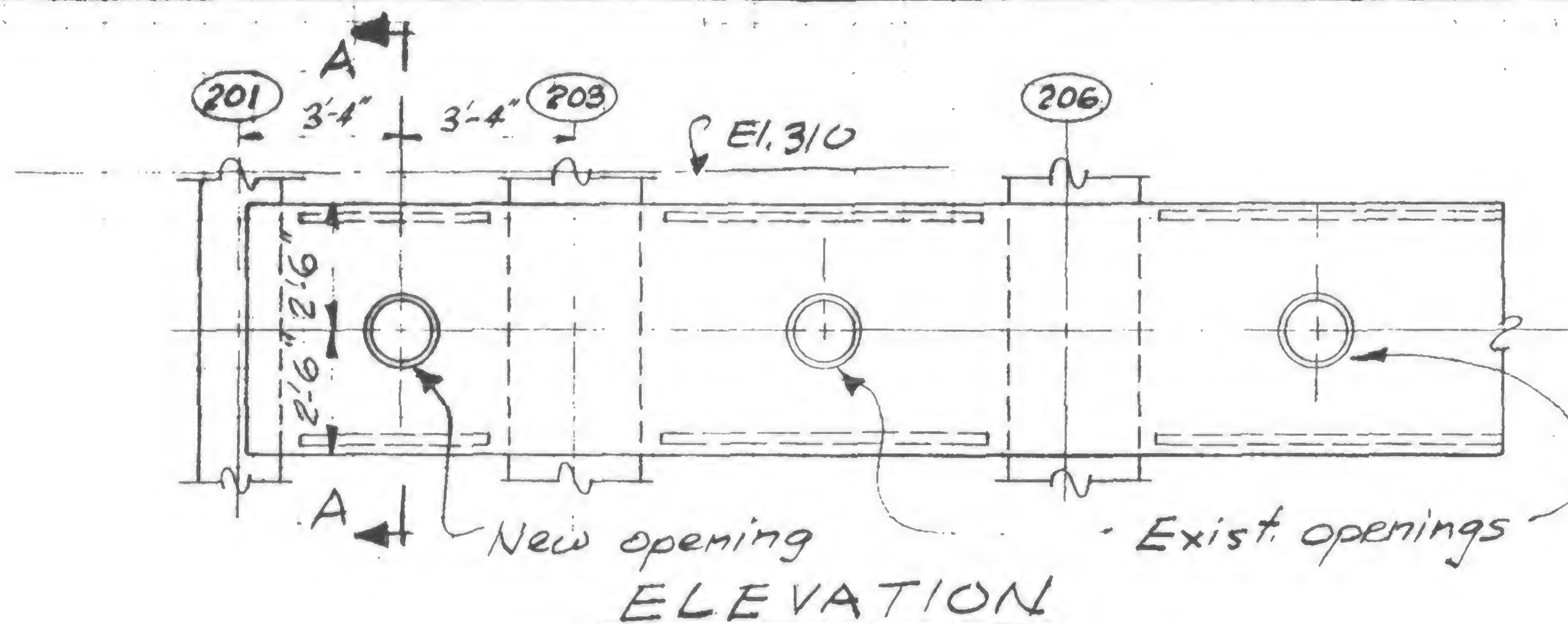
ROZLI

REVIEWED

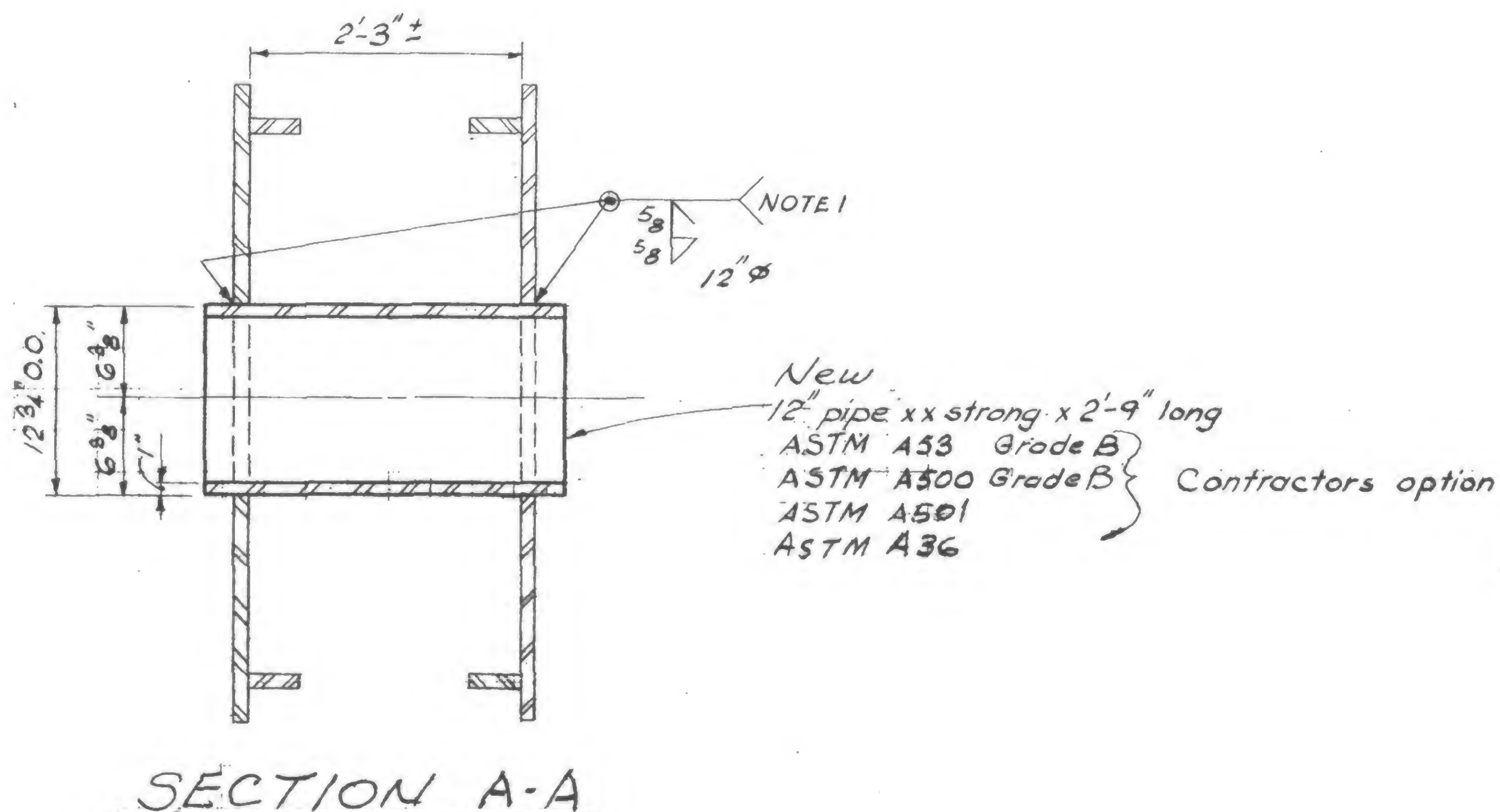
19-B-994



## REVISIONS

Note 1

Cut bevel in existing spandrel  
fl's with air-arc gouge.  
Increase fillet weld size by  
1/16 inch for each 1/8 inch of  
clearance between spandrel fl  
and pipe in excess of the  
first 1/16 inch of clearance.



New  
12" pipe xx strong x 2'-9" long  
ASTM A53 Grade B  
ASTM A500 Grade B } Contractors option  
ASTM A501  
ASTM A36



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DRAWN

T. Robertson

REVIEWED

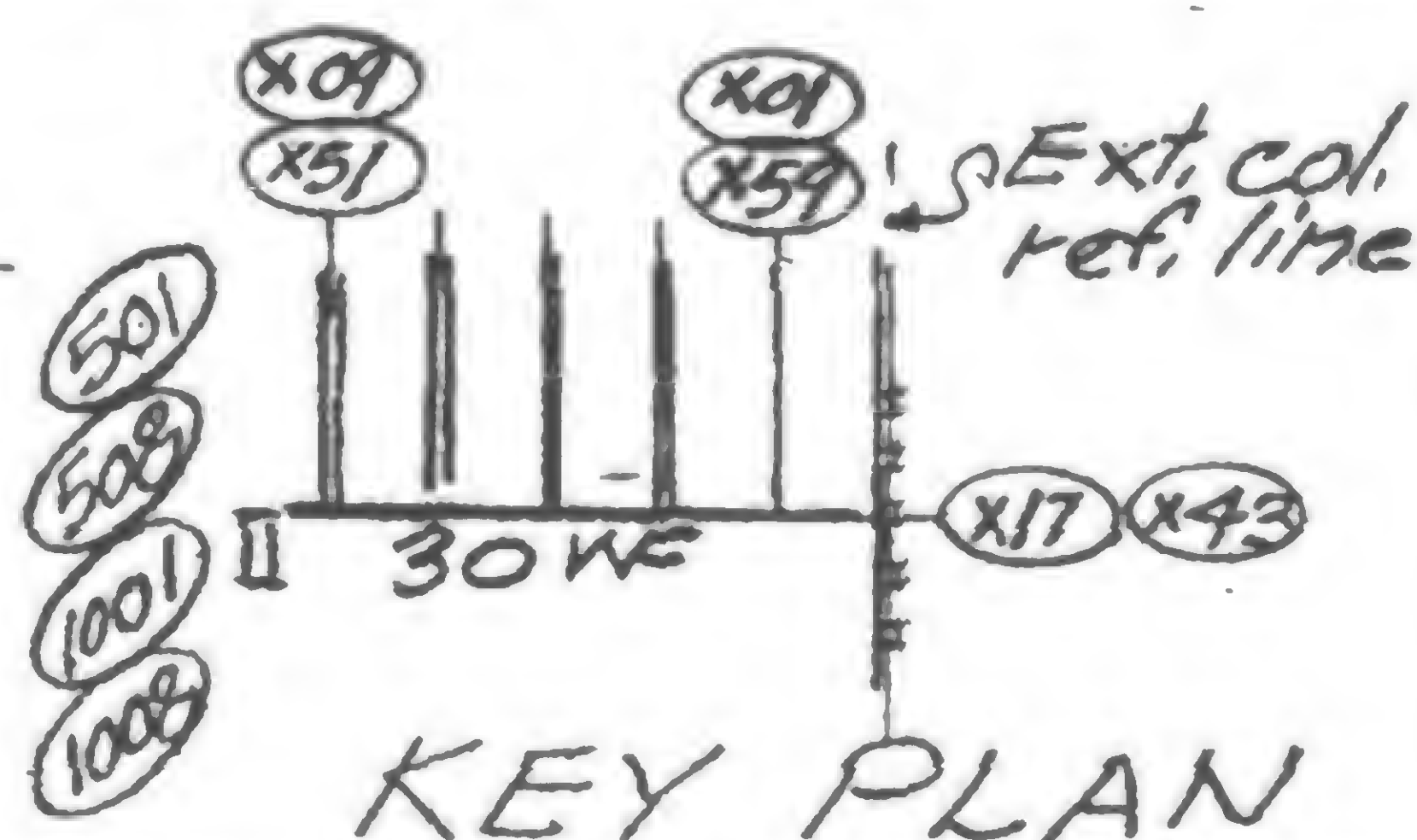
19-A-995



## REVISIONS

## SCHEDULE OF DETAIL LOCATION AND TYPE

TOWER	FLOOR	Exterior column number opposite detail location																			
		101	103	105	107	109	151	153	155	157	159	359	357	355	353	351	309	307	305	303	301
TOWER A	44	NR	3	NR	3	3	3	3	NR	3	NR	NR	3	NR	3	3	3	3	NR	3	NR
	45						3	3	NR	3	NR	NR	3	NR	3	3	3	3	NR	3	NR
	46											NR	3	NR	3	3	3	3	NR	3	NR
	47											NR	3	NR	3	NR	NR	3	NR	3	NR
	48											NR	3	NR	3	NR	NR	3	NR	3	NR
	49											NR	3	NR	3	3	3	3	NR	3	NR
	78	NR	3	NR	3	3	3	3	NR	3	NR	NR	3	NR	3	3	3	3	NR	3	NR
	79	NR	3	NR	3	3	3	3	NR	3	NR						3	3	NR	3	NR
	80	NR	3	NR	3	3	3	3	NR	3	NR										
	81	NR	3	NR	3	NR	NR	3	NR	3	NR										
	82	NR	3	NR	3	3	3	3	1	1	NR										
	83	NR	1	1	1	1	1	1	1	1	NR										
	44	NR	3	NR	3	3	3	3	NR	3	NR	NR	3	NR	3	3	3	3	NR	3	NR
	45						3	3	NR	3	NR	NR	3	NR	3	3	3	3	NR	3	NR
	46											NR	3	NR	3	3	3	3	NR	3	NR
	47											NR	3	NR	3	NR	NR	3	NR	3	NR
TOWER B	48											NR	3	NR	3	NR	NR	3	NR	3	NR
	49											NR	3	NR	3	3	3	3	NR	3	NR
	78	NR	2	NR	2	2	2	2	NR	2	NR	NR	2	NR	2	2	2	2	NR	2	NR
	79	NR	2	NR	2	2	2	2	NR	2	NR						2	2	NR	2	NR
	80	NR	2	NR	2	2	2	2	NR	2	NR										
	81	NR	2	NR	2	NR	NR	2	NR	2	NR										
	82	NR	2	NR	2	2	2	2	NR	2	NR										
	83	NR	2	NR	2	2	2	2	NR	2	NR										



## Notes:

1. Detail 1 is existing in locations indicated
2. For Detail 2 & 3 see 19-AB-996.2
3. NR indicates detail not required
4. / indicates detail not applicable

19-AB-996.1



DESIGNED  
JTM, WAB  
DRAWN

REVIEWED

WAB



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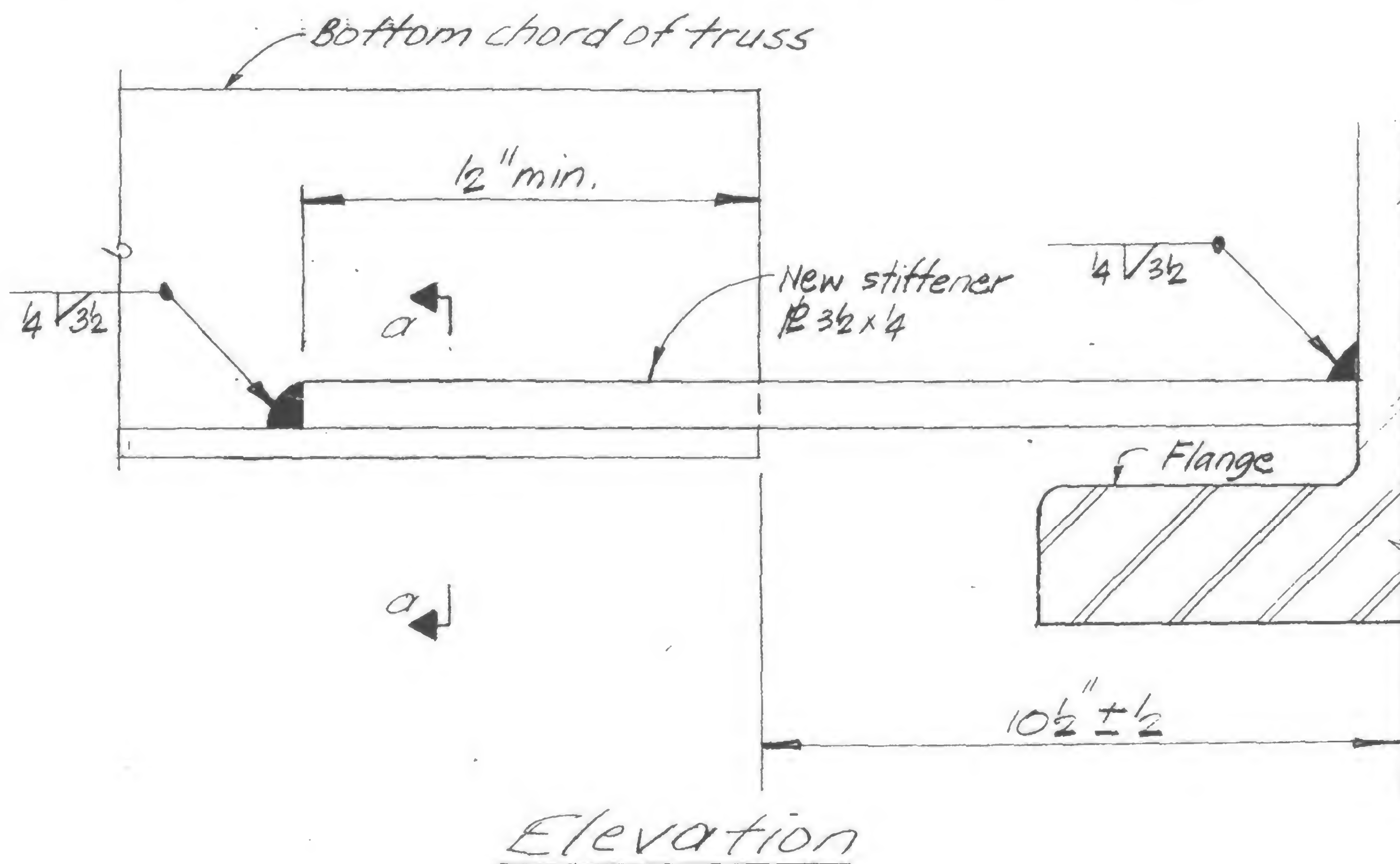
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE TRUSS BOTTOM CHORD TO BEAM CONN.

DATE 4-15-71

REVISIONS



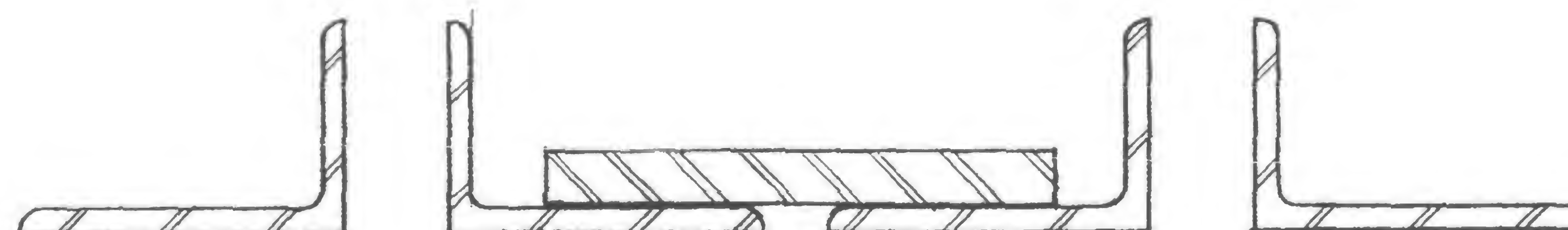
PROCEDURE

Detail 2 -

1. Straighten web of beam to vertical position.
2. Weld stiffener plate to web.
3. Hold beam in position.
4. Weld stiffener plate to bottom chord of truss.

Detail 3 -

1. Weld stiffener plate to web.
2. Weld stiffener plate to bottom chord of truss.



Section a-a

Details 2 and 3



DESIGNED LEL, JTM

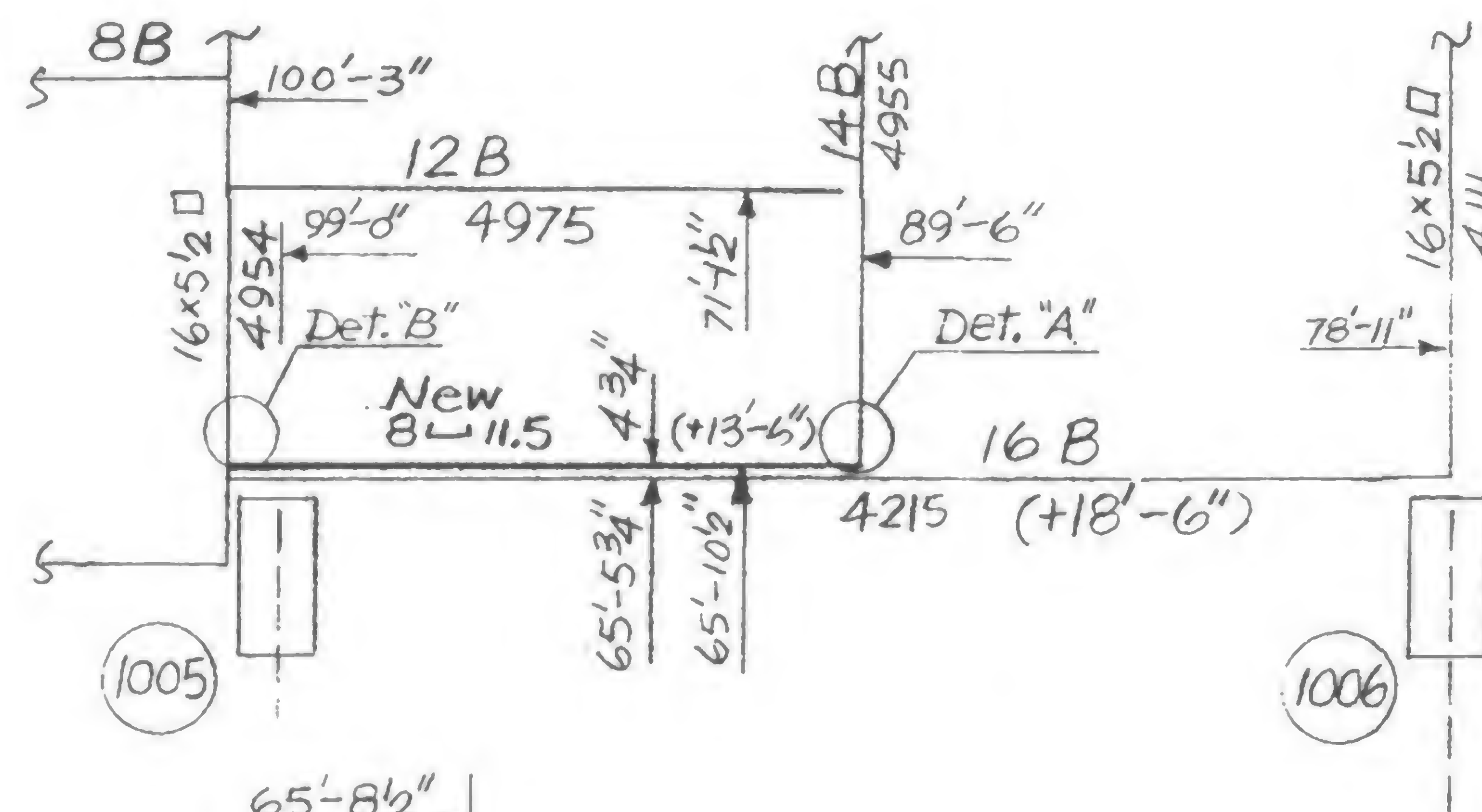
DRAWN JA

REVIEWED

19-AB-996.2

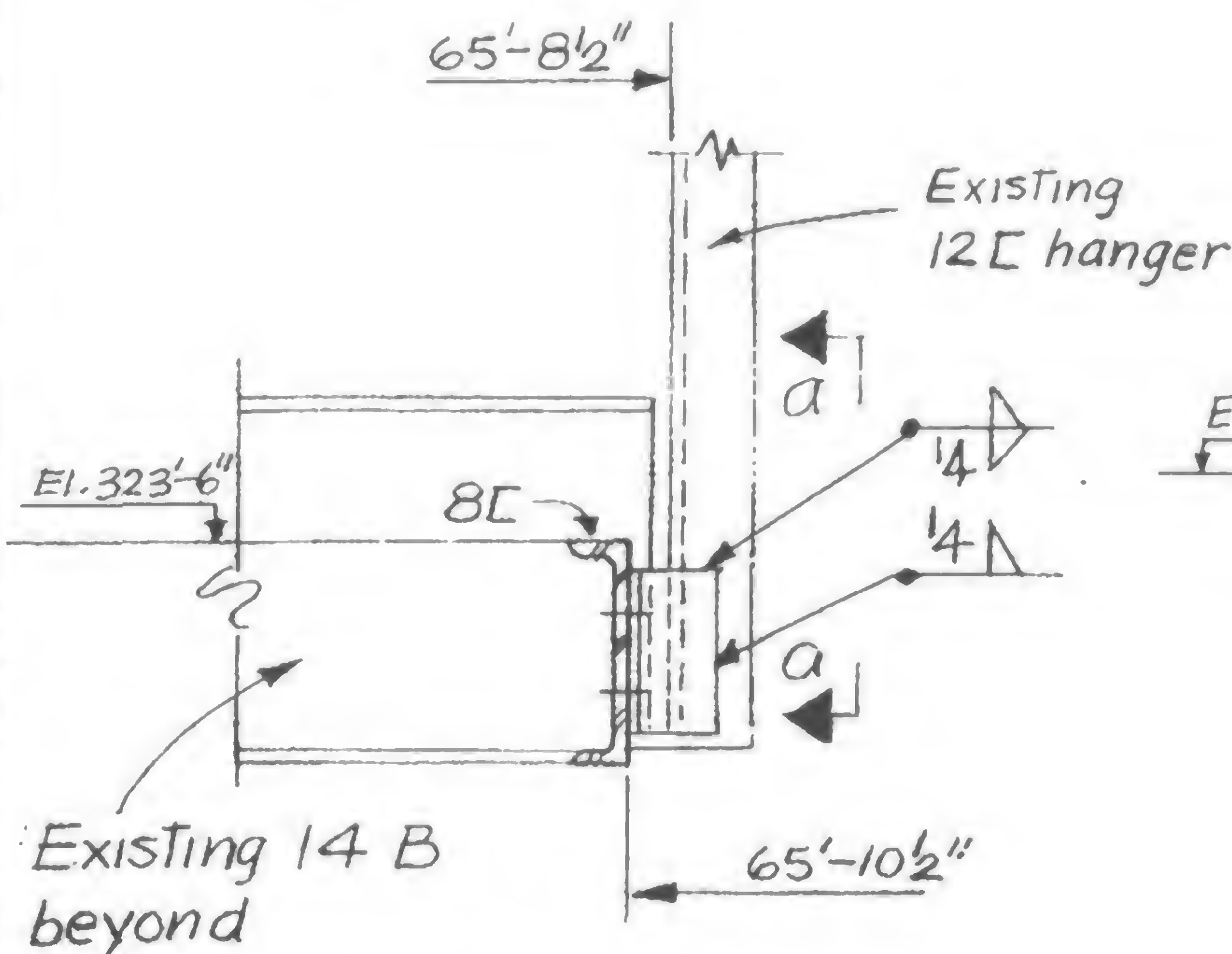
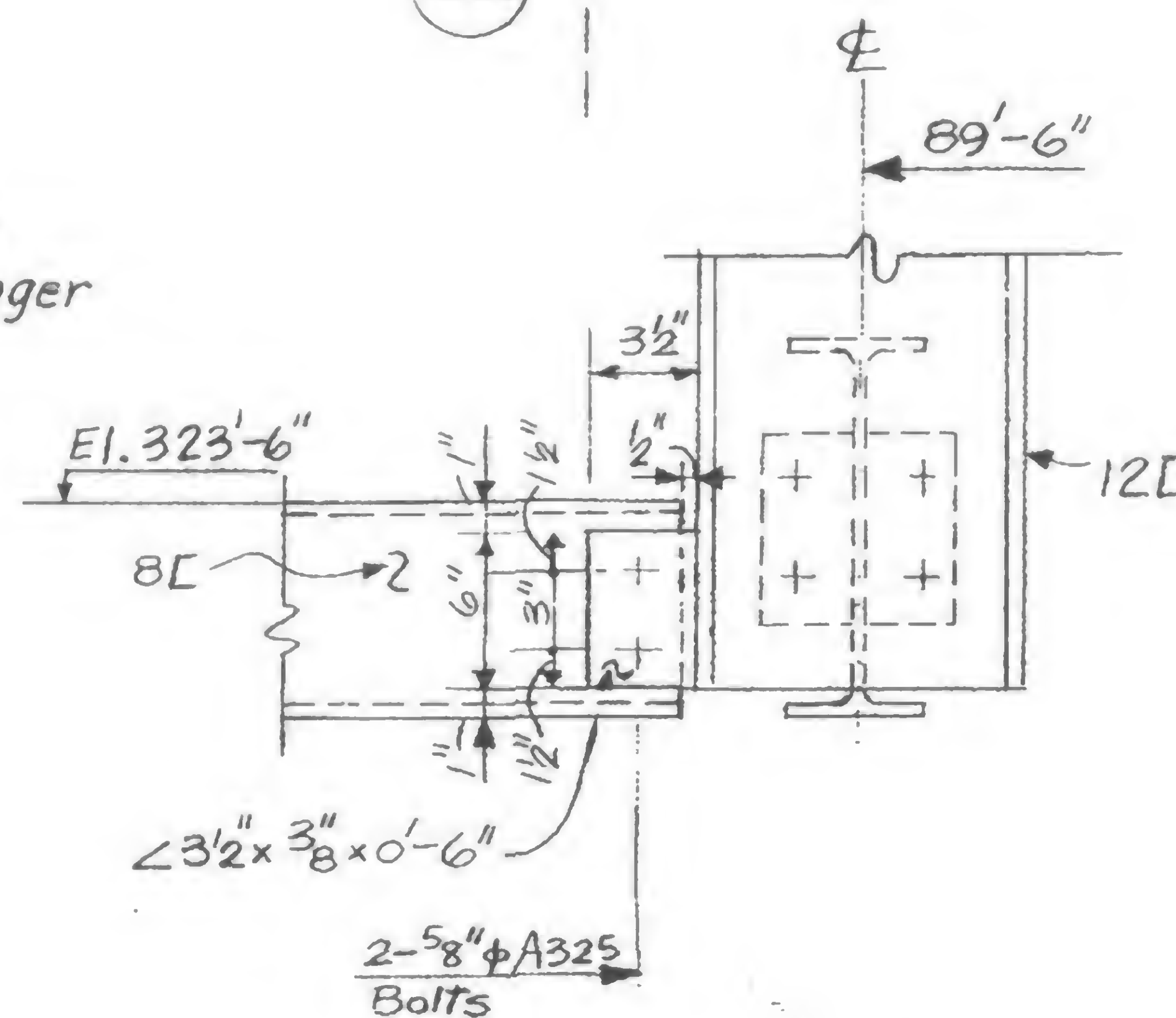
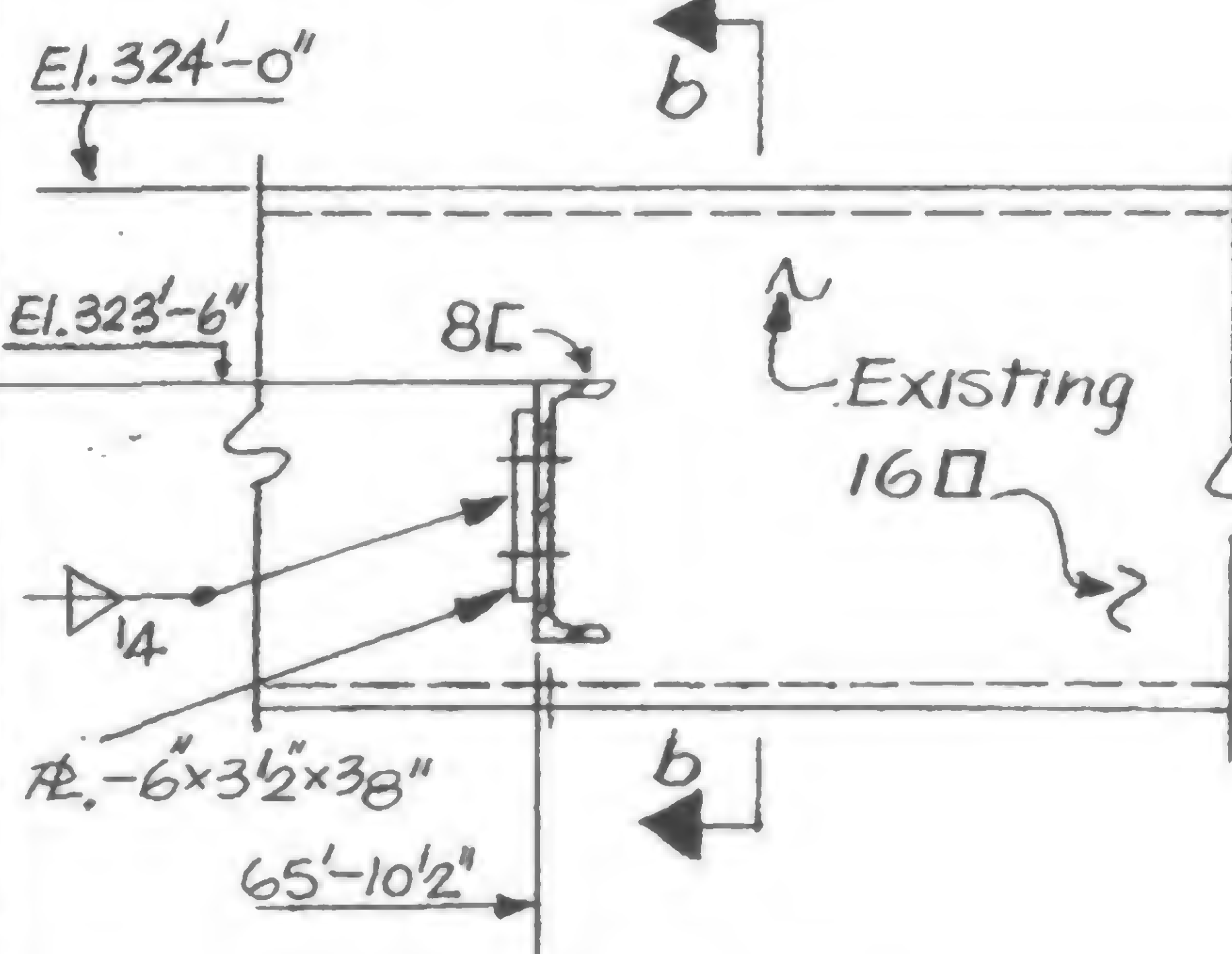
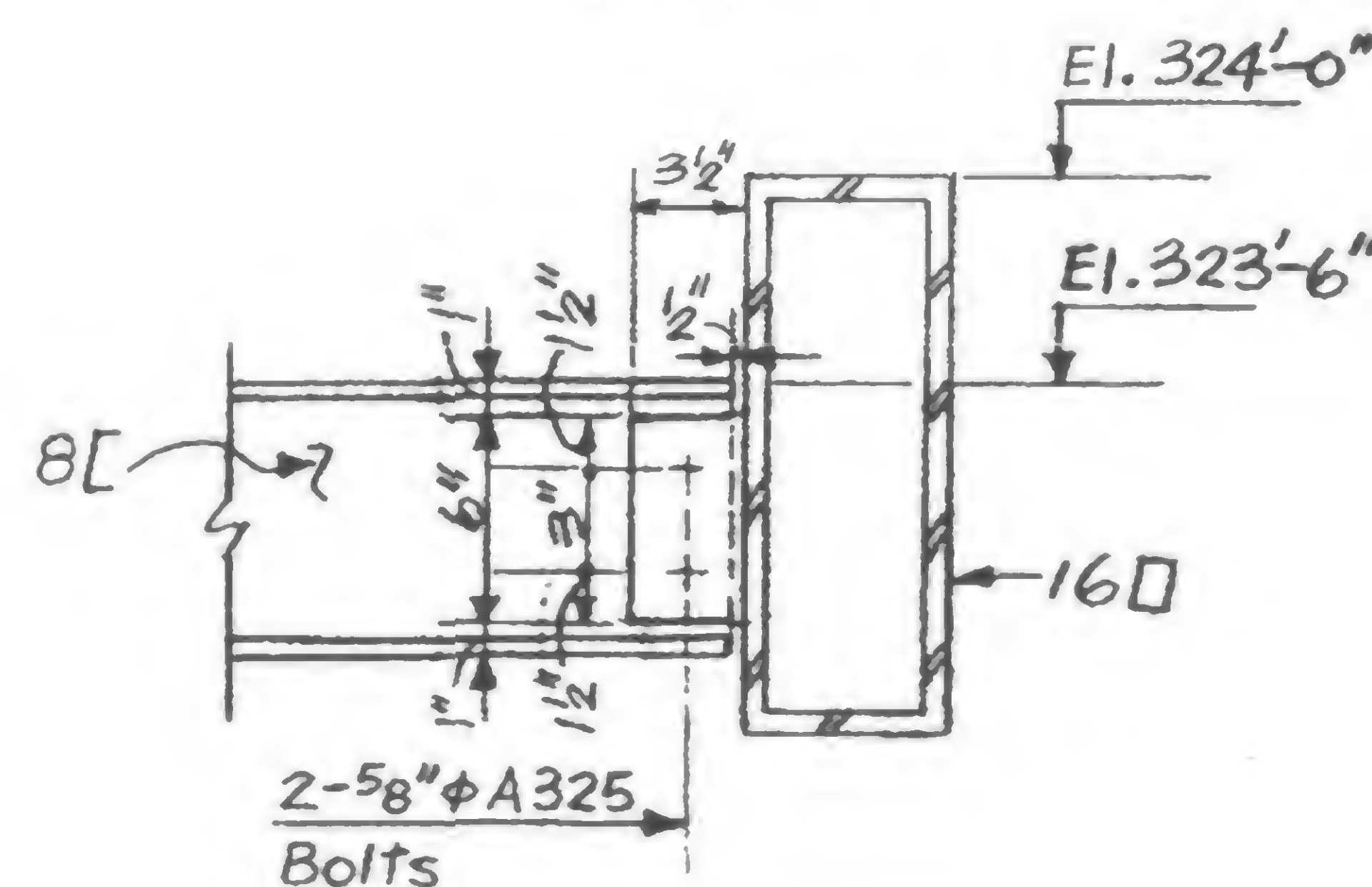
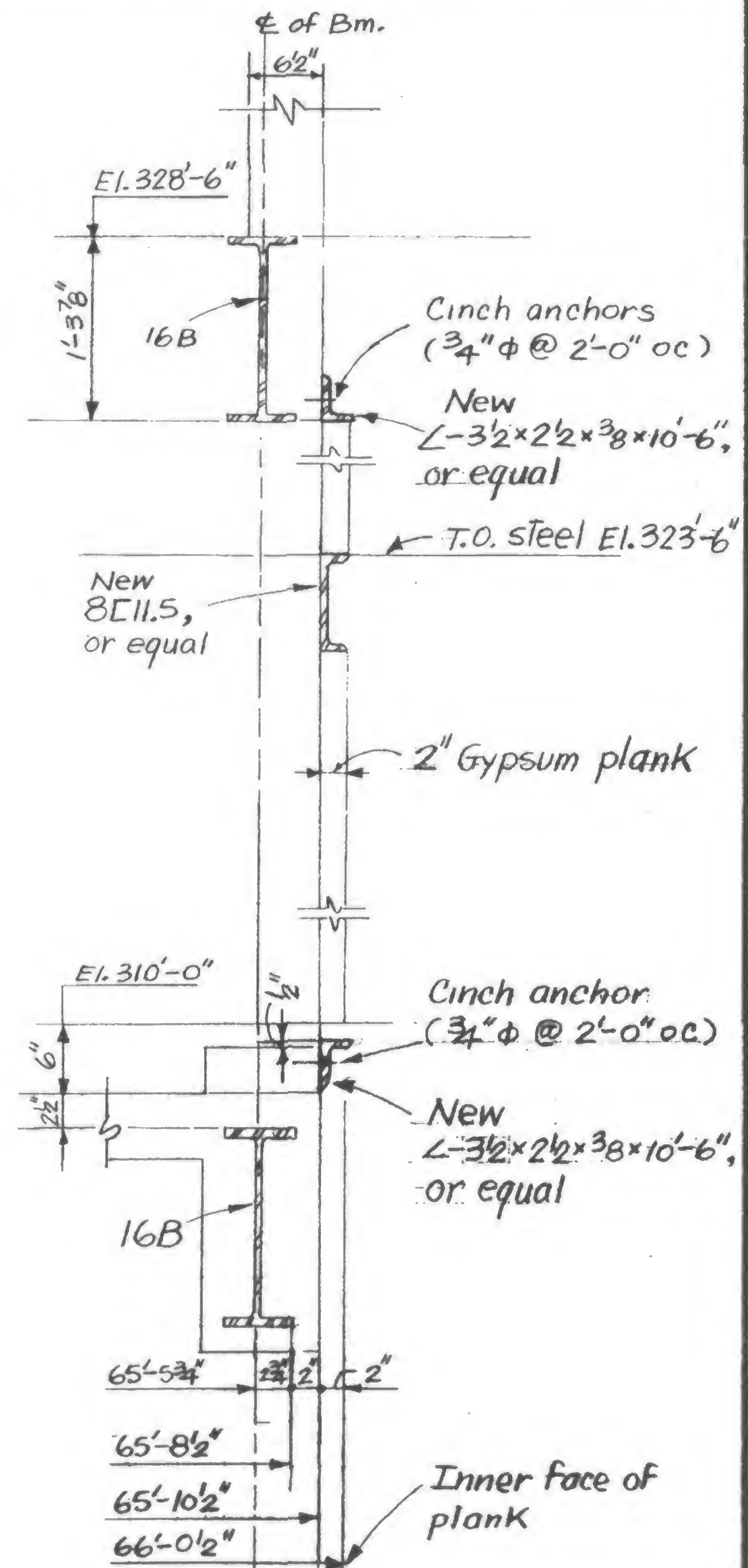


## REVISIONS

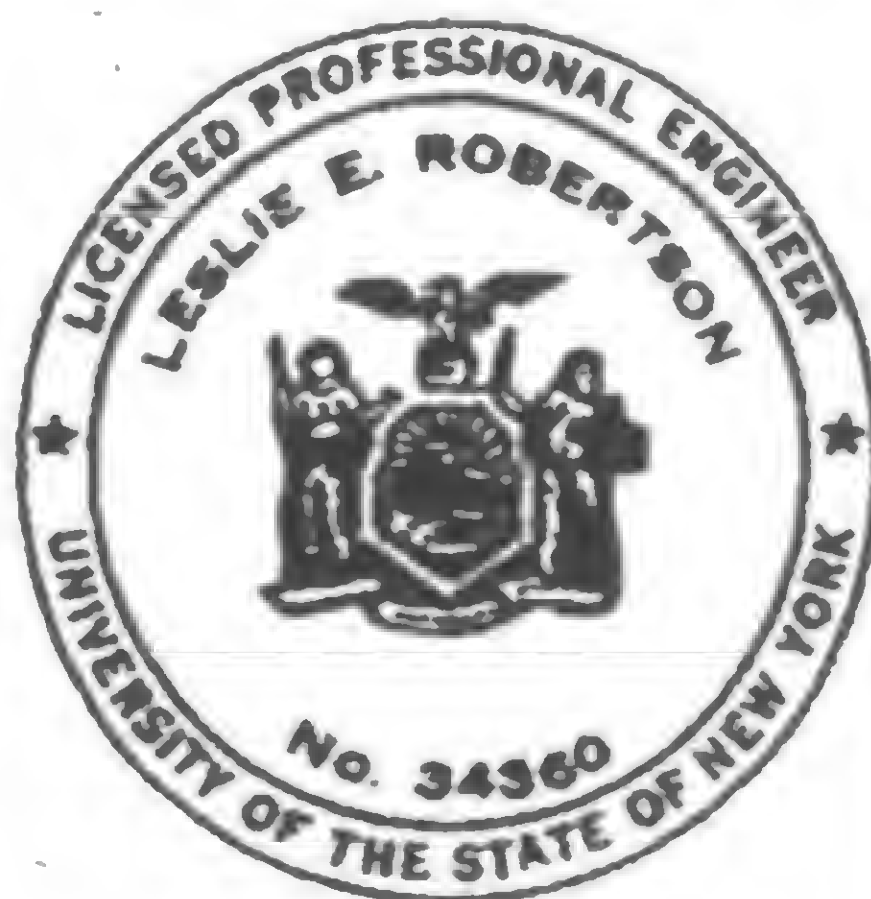


## Note:

All framing at 14'-0" from reference floor line, El. 310'-0", except as noted.

Part of framing plan  
Intermediate levelDetail "A"  
1" = 1'-0"Section a-a  
1" = 1'-0"Detail "B"  
1" = 1'-0"Section b-b  
1" = 1'-0"

3/4" = 1'-0"



DESIGNED

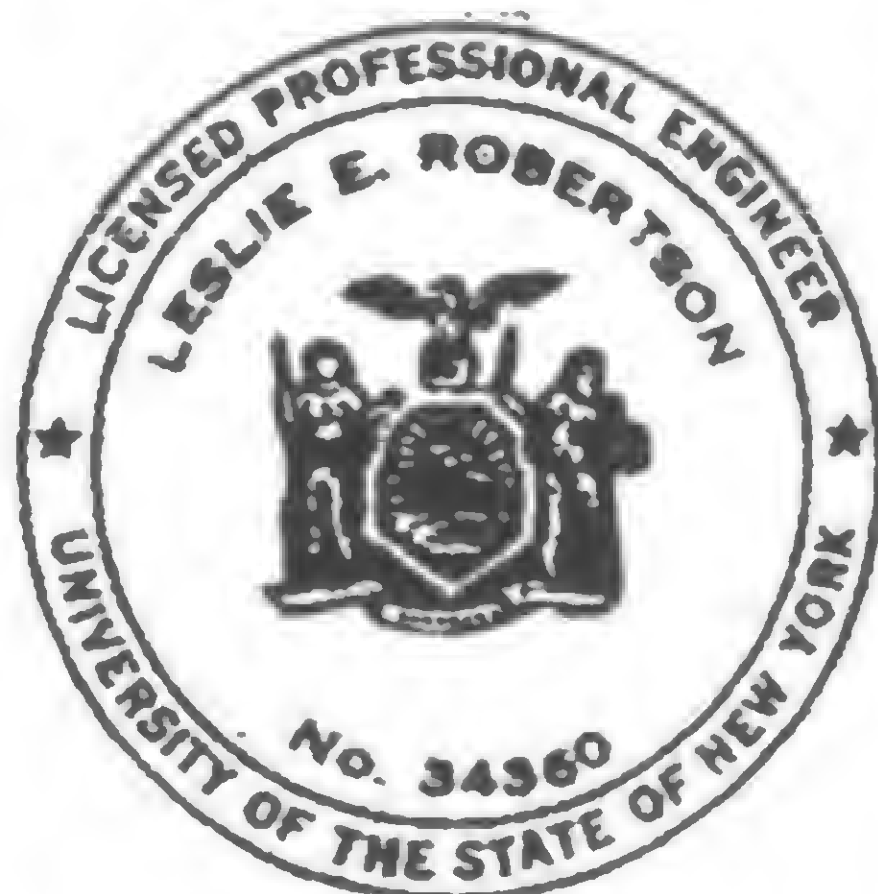
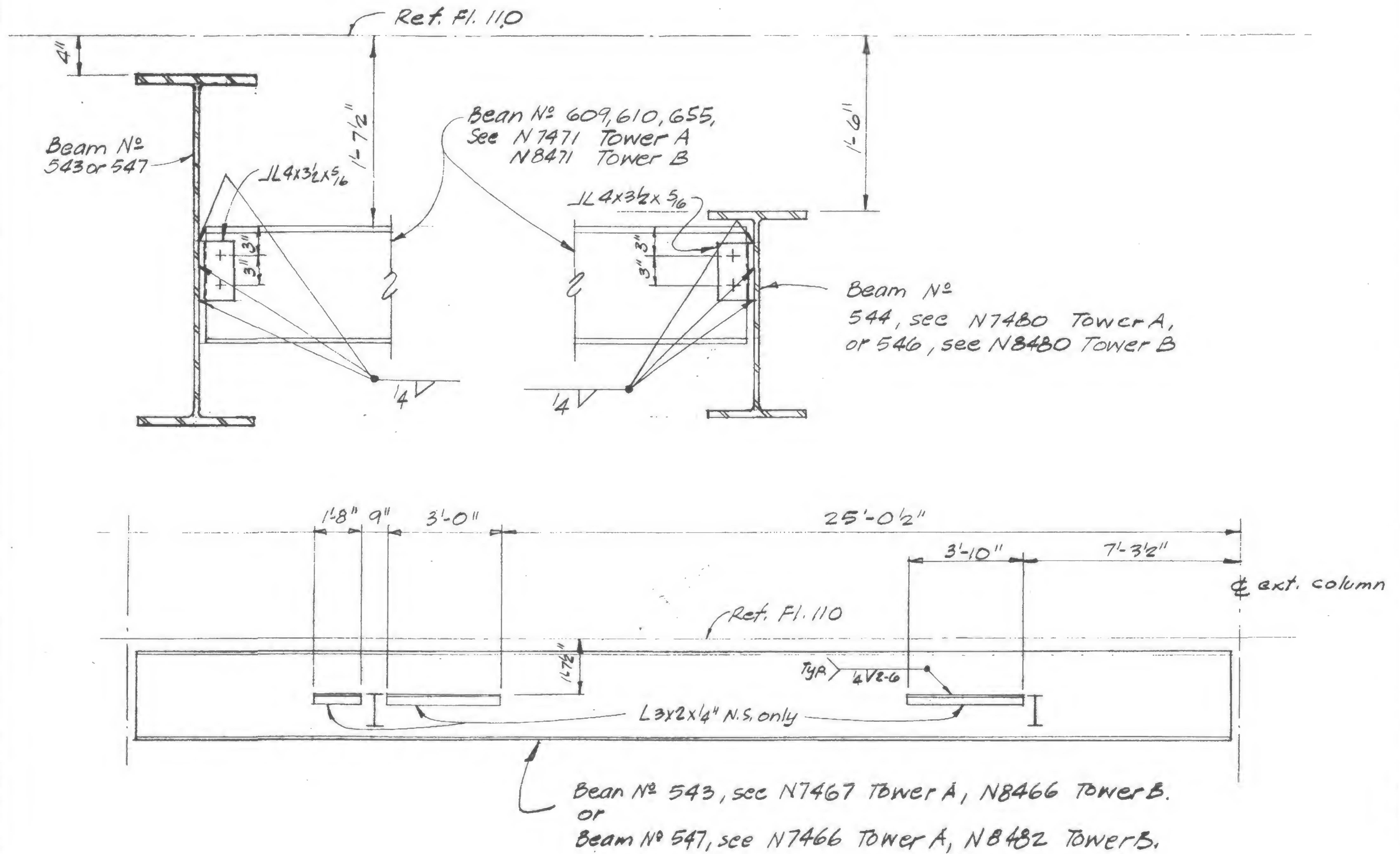
DRAWN

D. Chew

REVIEWED



## REVISIONS



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DRAWN

P.M. Ocker

REVIEWED



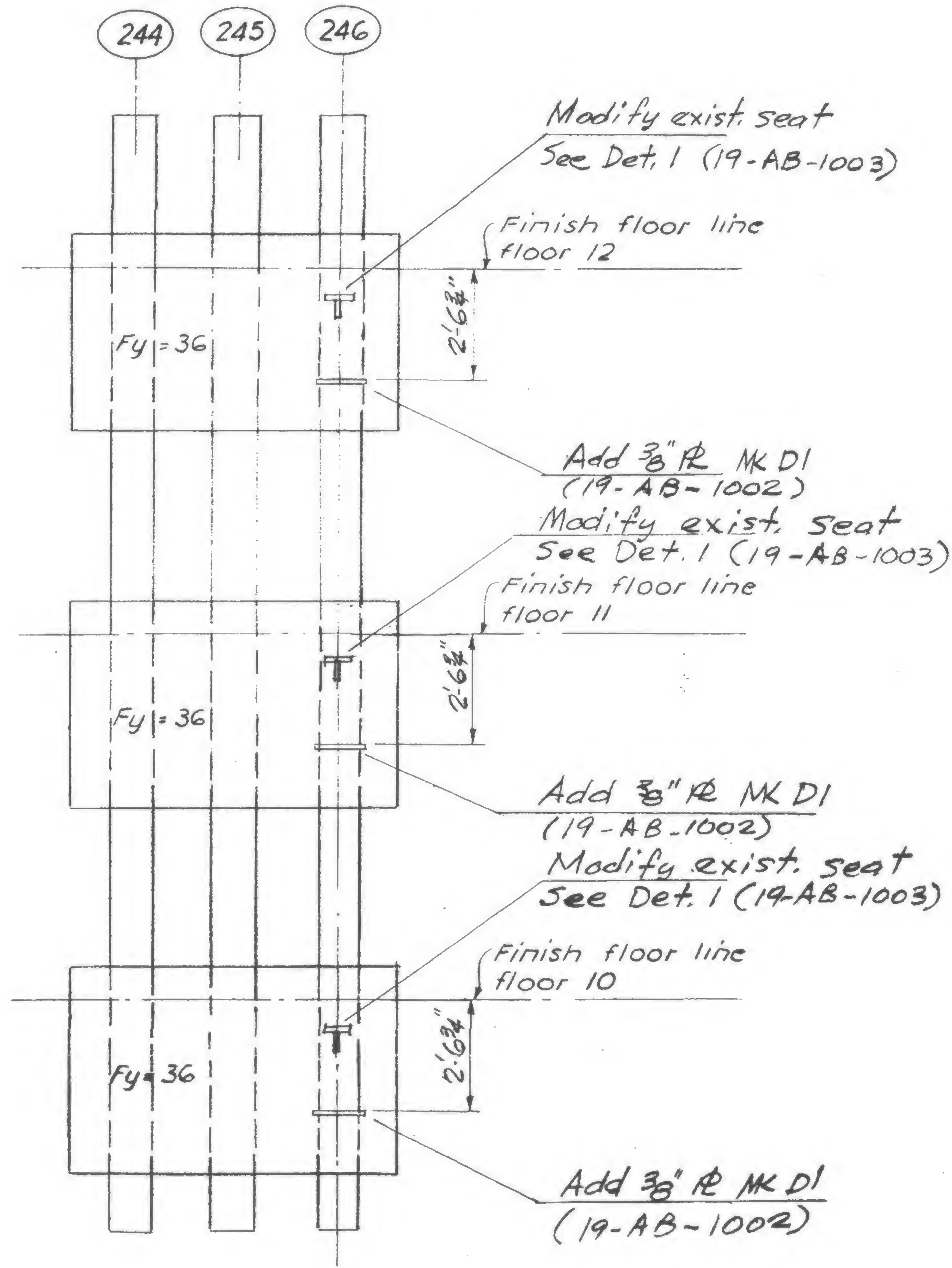
SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER* TITLE *PANEL 245 A12-9*

DATE *6-5-69*

REVISIONS



DESIGNED

DRAWN  
*F. Smith*

REVIEWED

*19-A -1001*

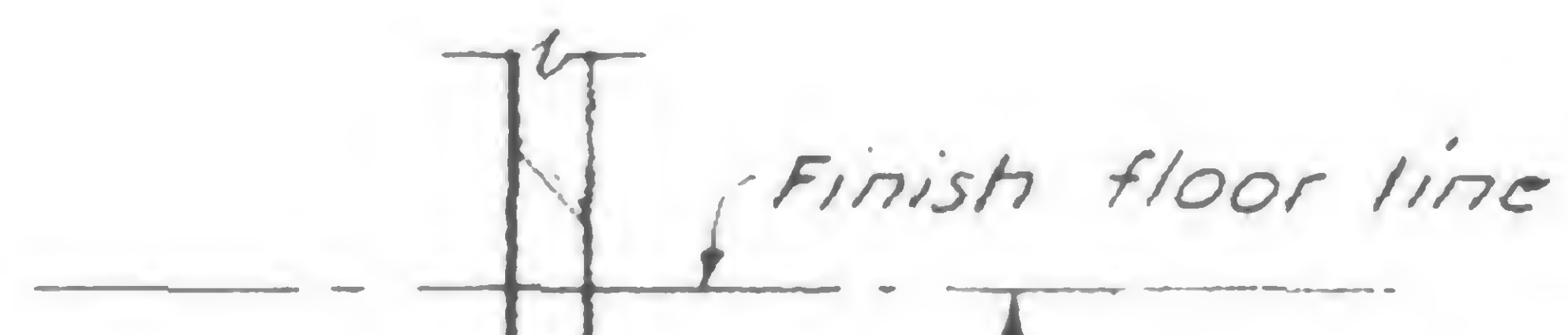


SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

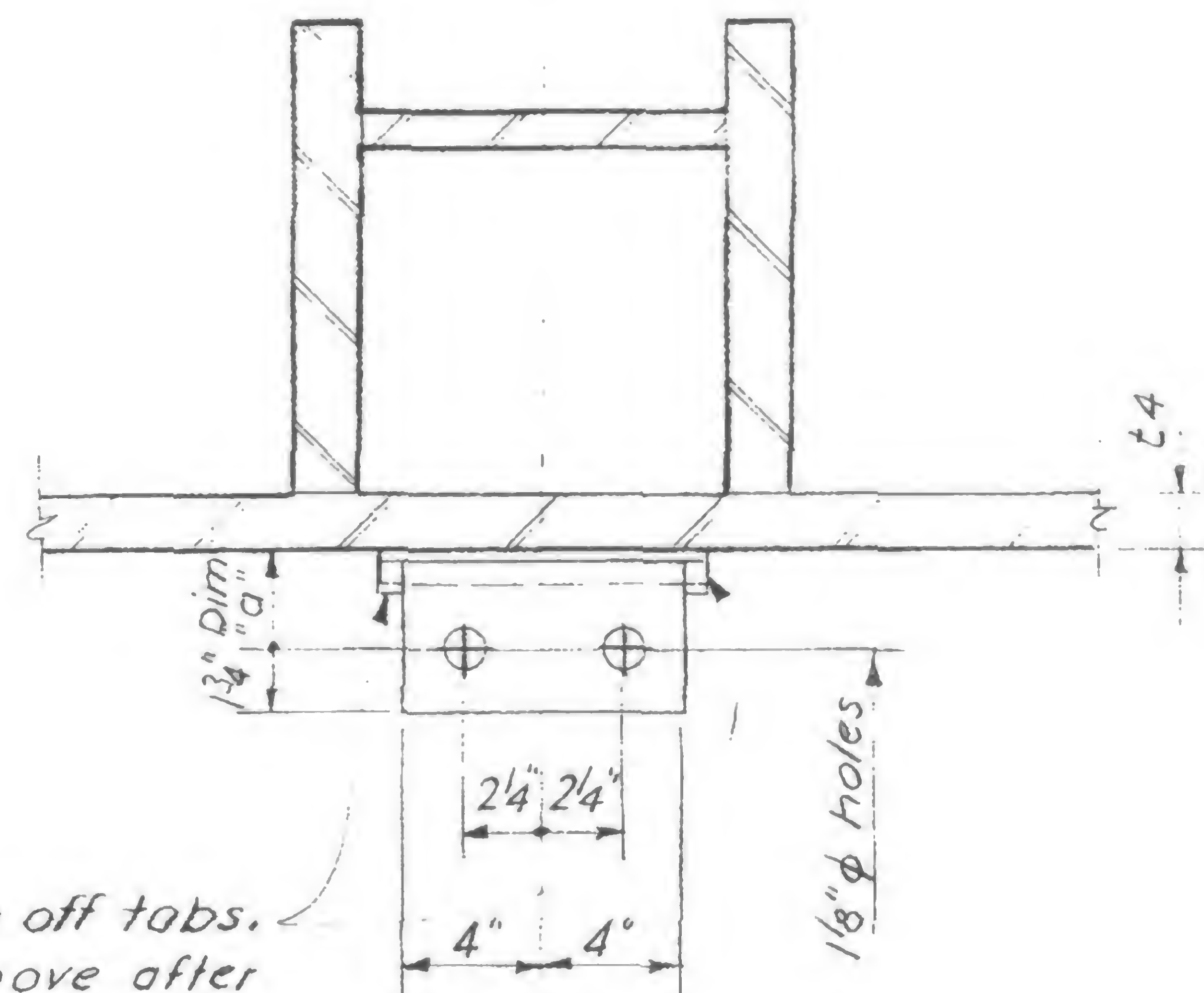
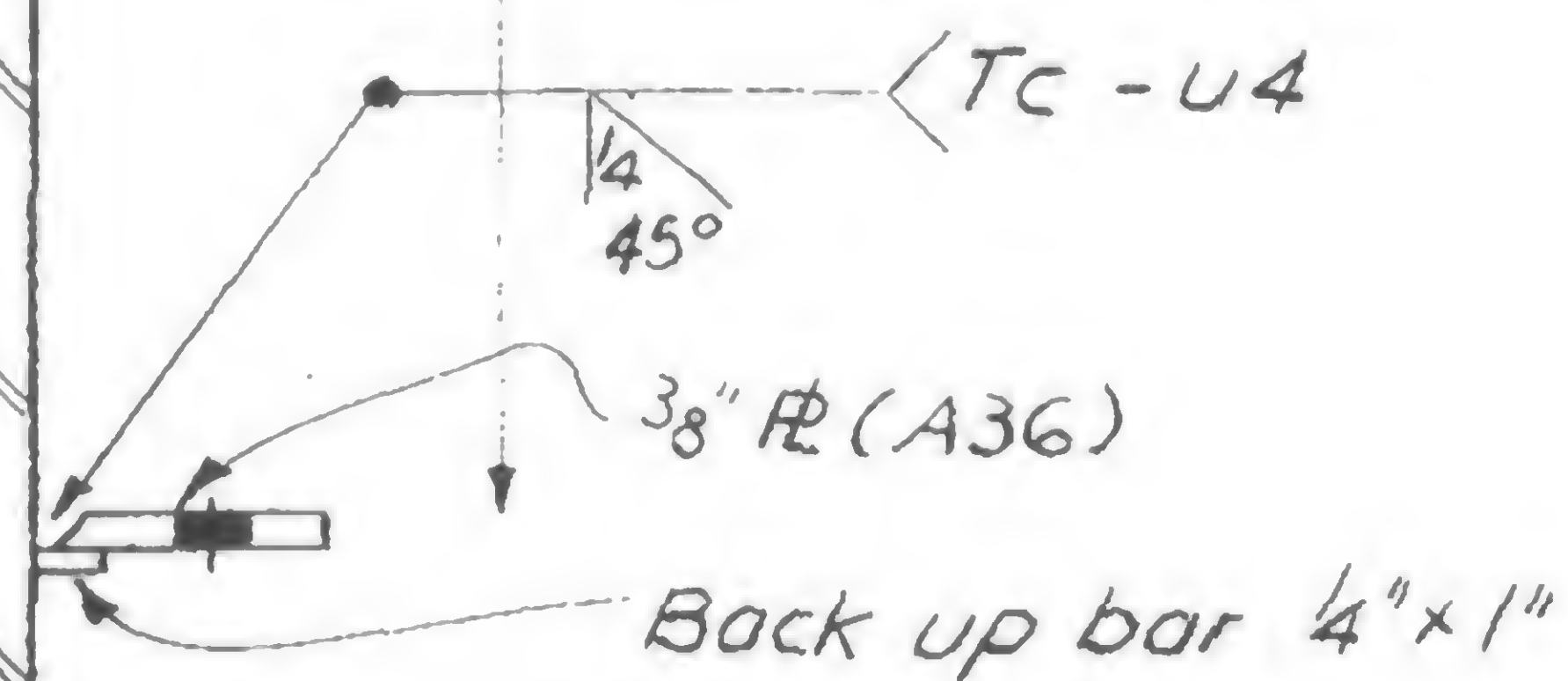
Structural &amp; Civil Engineers

PROJECT **THE WORLD TRADE CENTER**TITLE **EXTERIOR WALL PANEL - SEAT DETAIL D**DATE **6-5-69**

REVISIONS

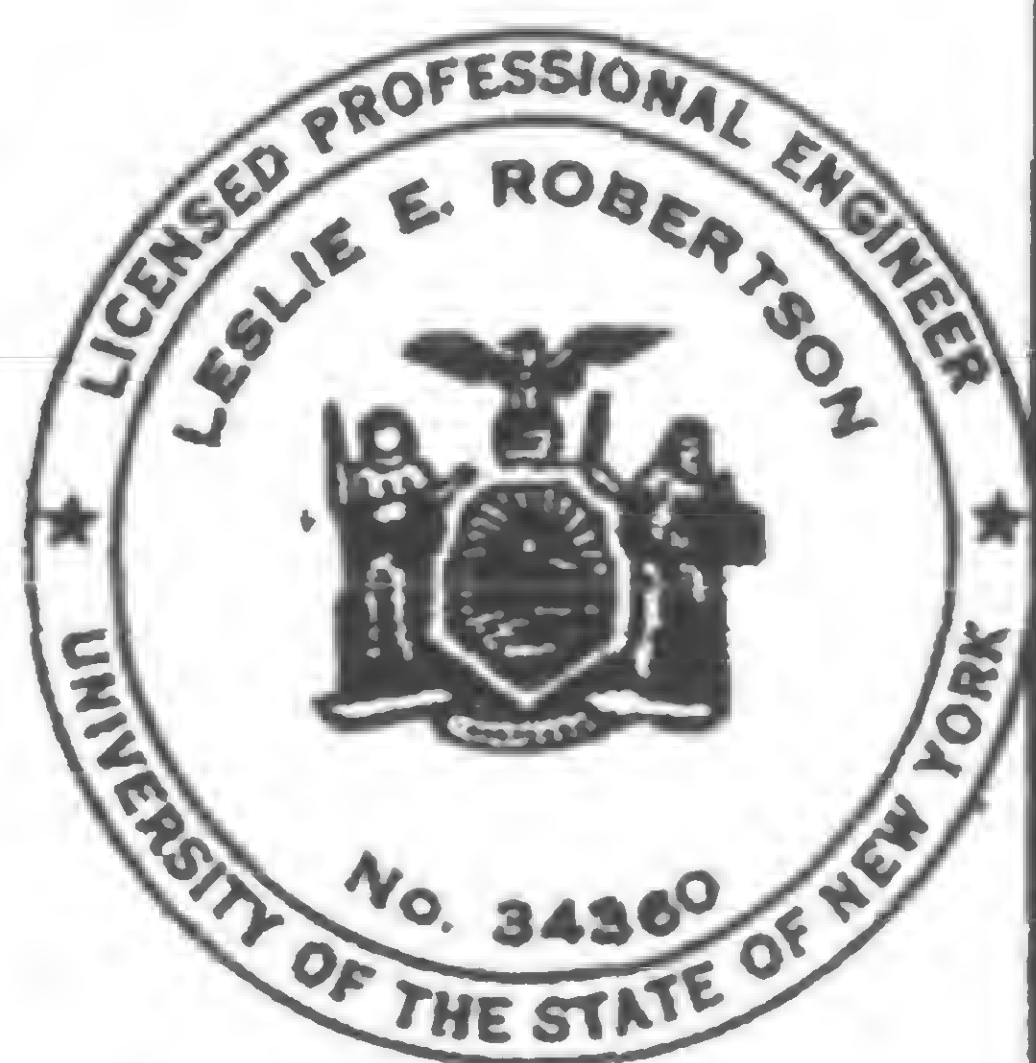


Dimension G  
See Dwg. Book 19  
Panel elevations or  
See panel schedules  
Drawing Book 4-A1  
and 4-B1 for seat  
detail number, then  
obtain dimension G  
from seat detail  
schedule drawings  
4-AB2-35 and 4-AB2-36



Run off tabs.  
Remove after  
welding

MK	DIM "a"	t4	FLOORS
D1	2 7/8"	1 3/8" - 1 1/8"	10 - 32
D2	3 1/8"	1 1/16" - 7/8"	33 - 48
D3	3 3/8"	1 3/16" - 5/8"	49 - 70
D4	3 5/8"	9/16" - 3/8"	71 - 107



DESIGNED

DRAWN

F. Smith

REVIEWED

19-AB-1002



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

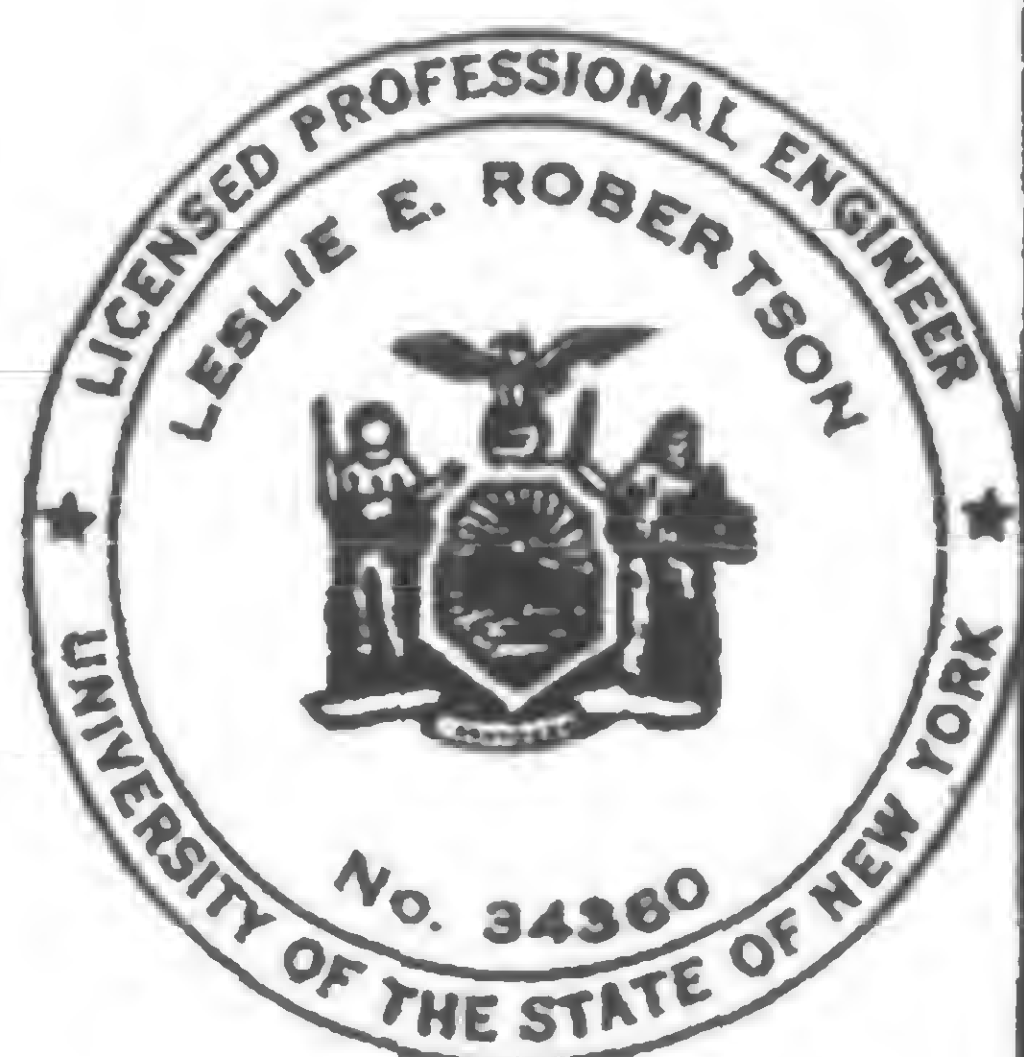
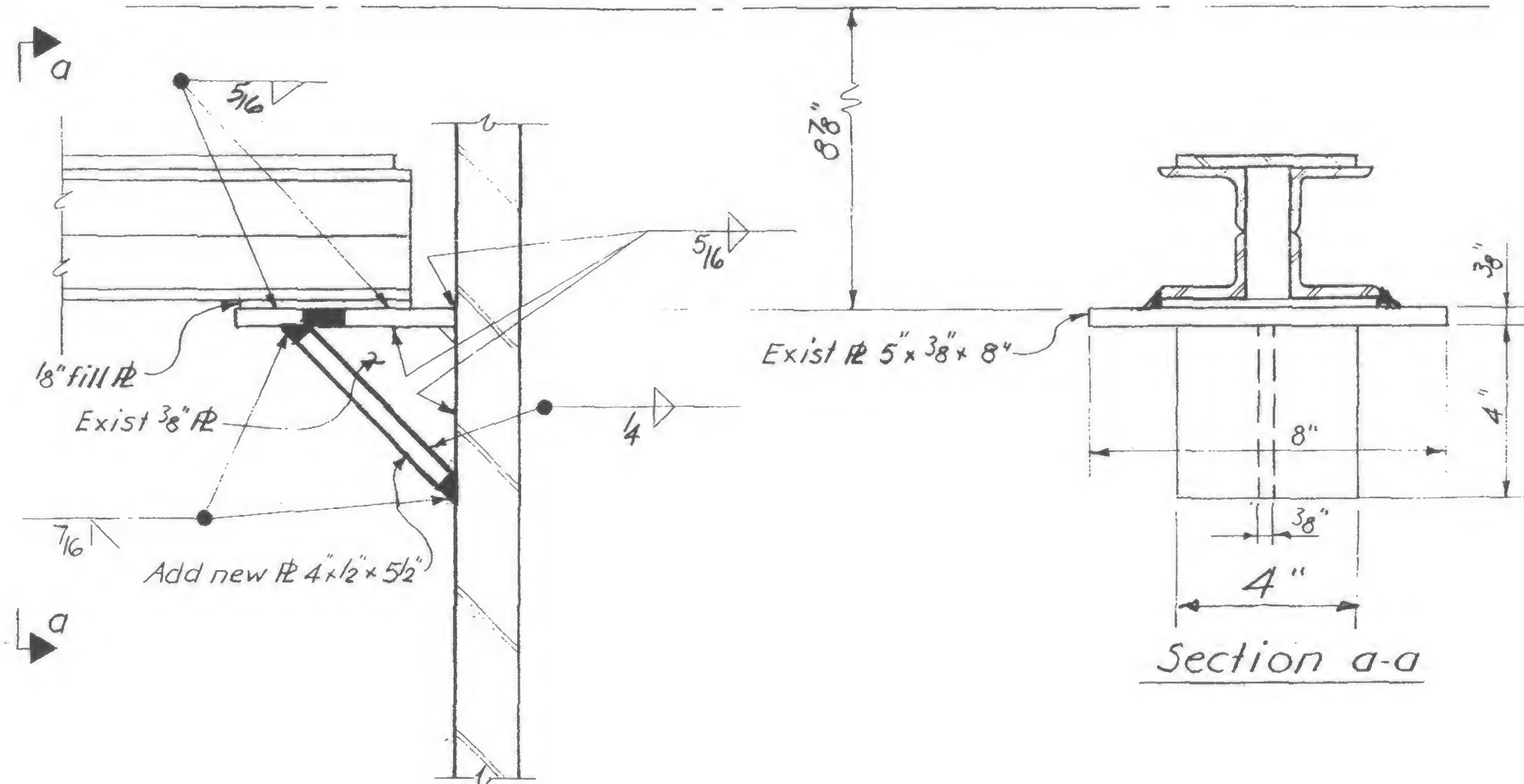
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL PANEL-SEAT DETAIL 1

DATE 6-5-69

REVISIONS



DESIGNED

DRAWN  
F. Smith

REVIEWED

19-AB-1003

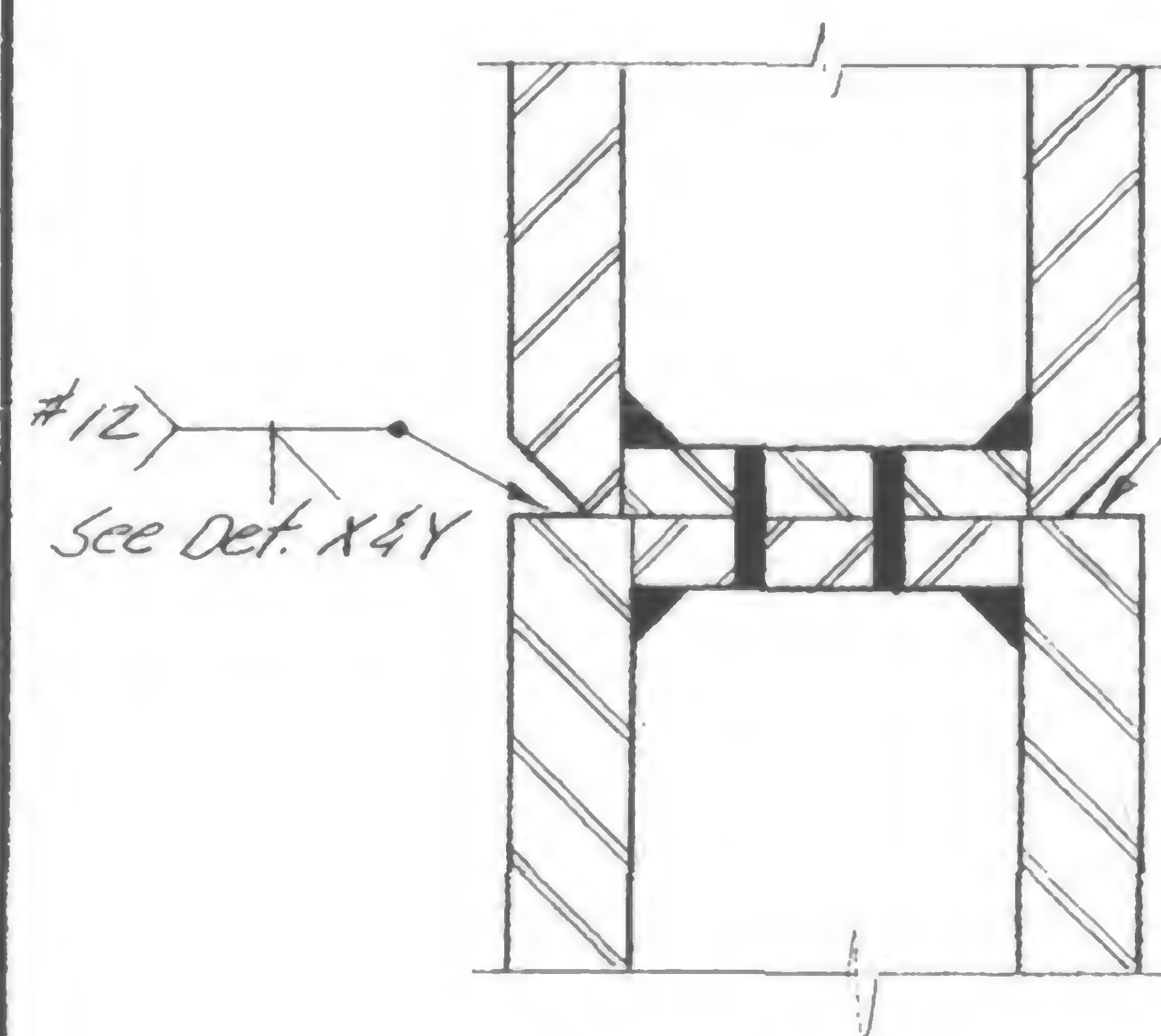


PROJECT THE WORLD TRADE CENTER

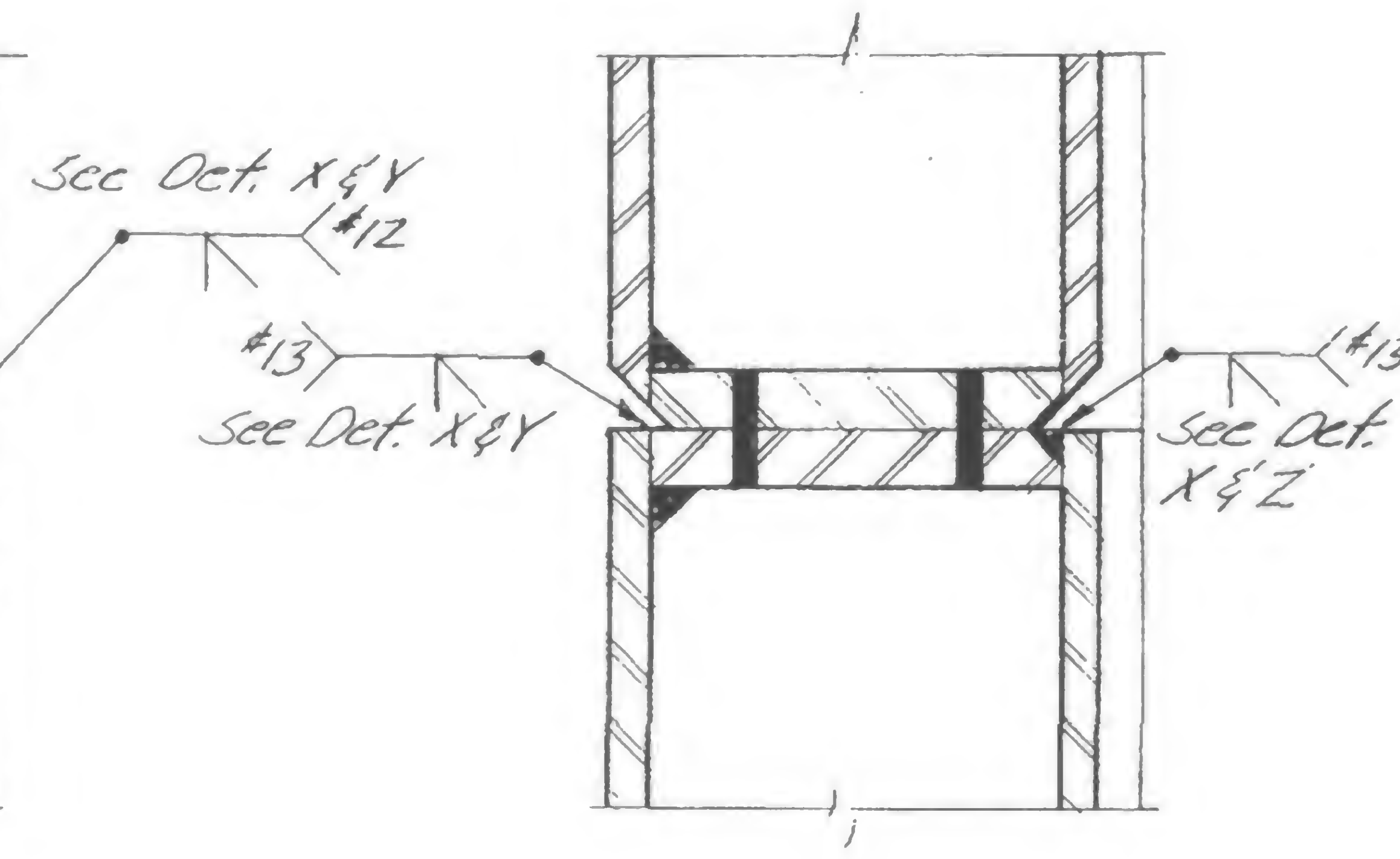
TITLE EXTERIOR WALL - COLUMN SPLICE REPAIR PROCEDURE

DATE 6-20-69

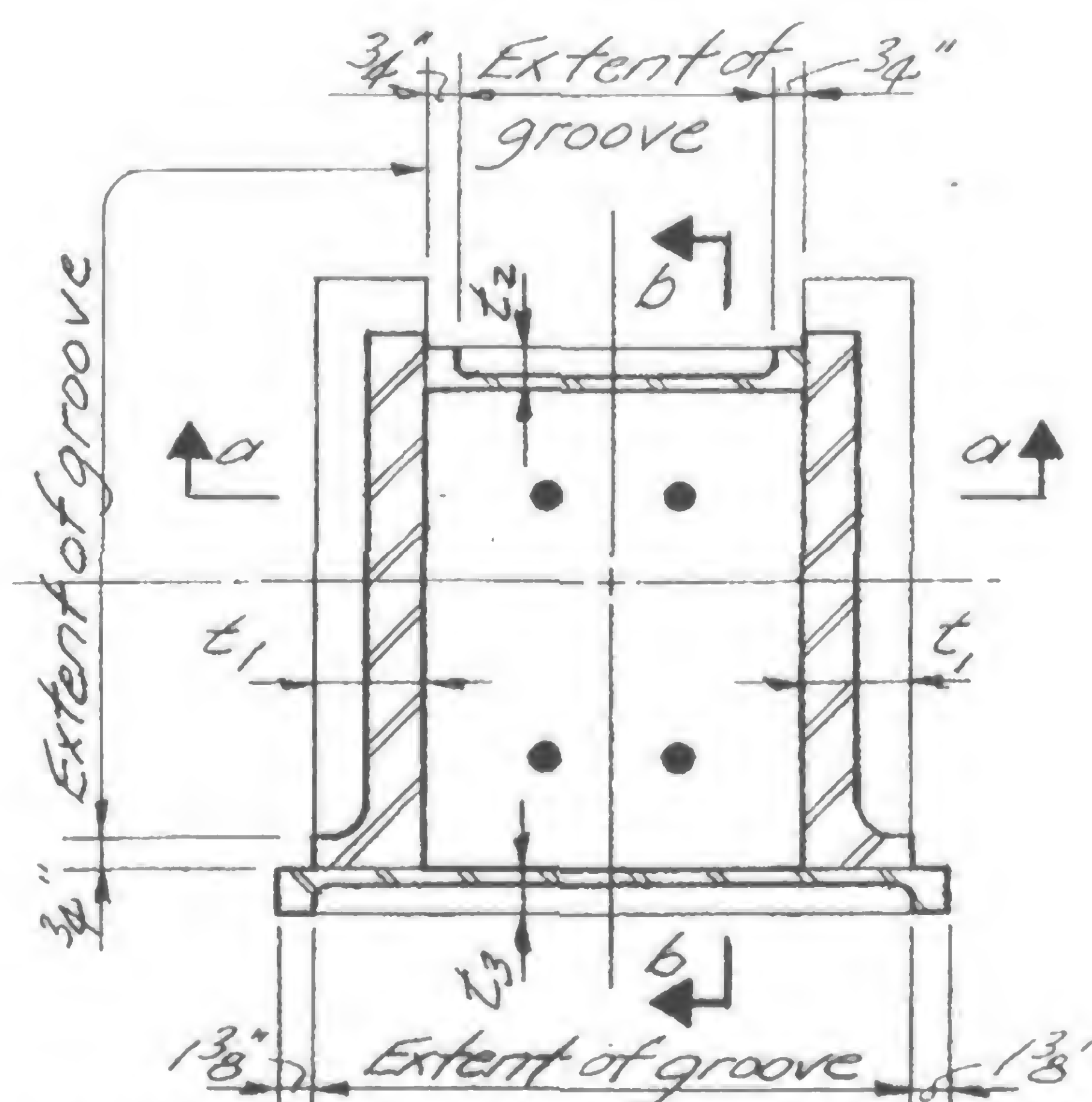
## REVISIONS



Section a-a

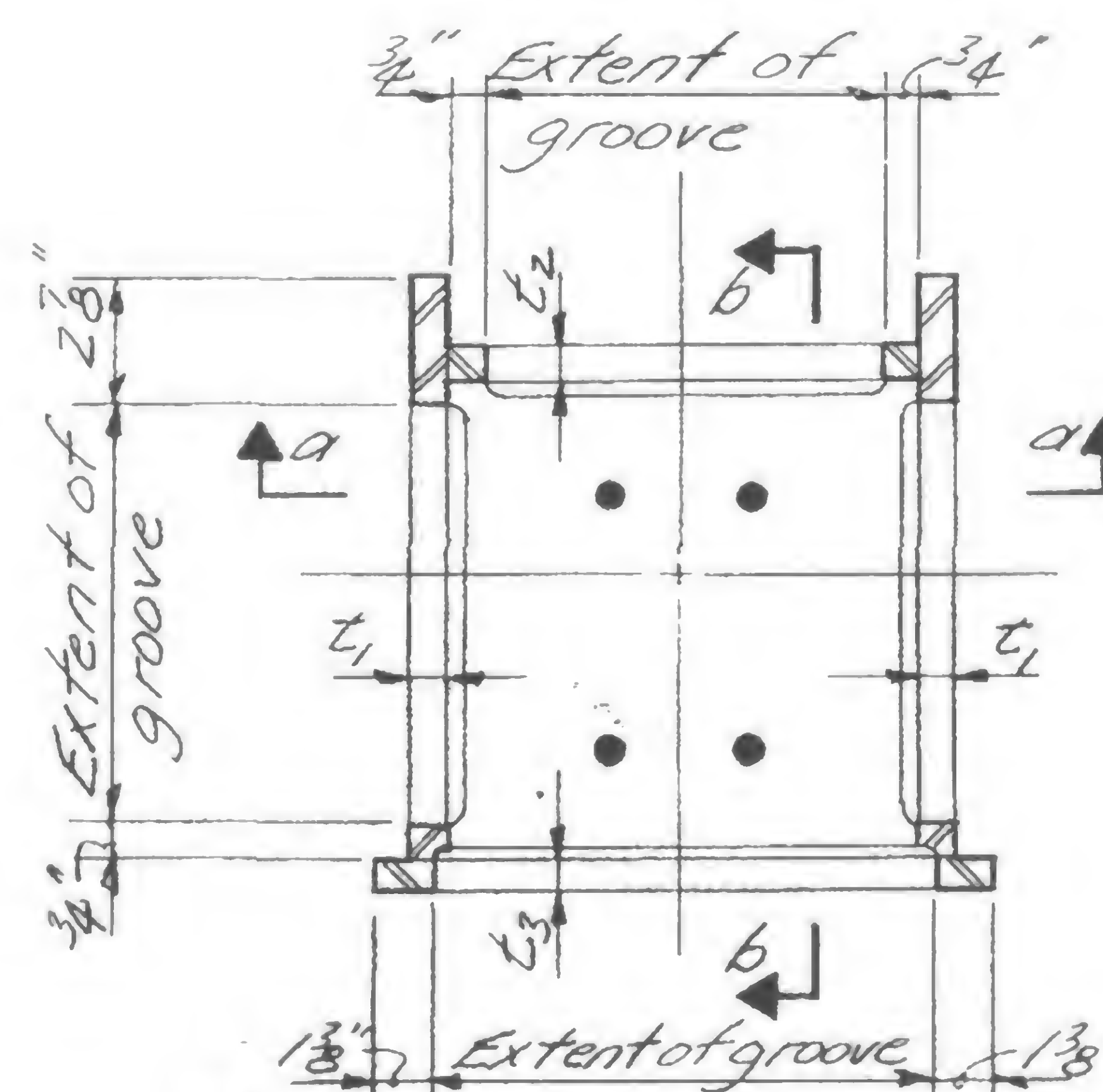


Section b-b



PLAN ABOVE SPLICE

Column Type 128-164



PLAN ABOVE SPLICE

Column Type 120-127

## NOTES:

1. Weld size shall be determined by the upper column type at the splice.
2. Preparation for welds shall be accomplished by arc air gouging to dimensions shown in schedule.
3. For Detail X, Y, Z see 19-AB-1004.2
4. Erector to supply shims of 18 ga. stock, where required, to maintain full bearing. Shim material to be ASTM A245, Grade D. For plan of shim see 4-AB2-12.

5. Preheat shall be not less than AWS minimums and shall conform, wherever applicable, to steel manufacturer's recommendations.
6. Welding electrodes shall be determined by the  $F_y$  of the upper column type at the splice. See welding electrode table.

COLUMN TYPES	WELD SIZE	
	WELD 12	WELD 13
120 thru 122	1/2	1/2
123 thru 129	5/8	1/2
130 thru 134	3/4	1/2
135 thru 139	7/8	5/8
140 and 141	1	5/8
142 thru 145	1 1/8	5/8
146 thru 149	1 1/4	5/8
150 thru 155	1 5/8	5/8
156 thru 158	1 5/8	3/4
159 thru 164	1 3/4	3/4

## WELDING ELECTRODE TABLE

$F_y$ GREATER THAN	$F_y$ EQUAL OR LESS THAN	ASTM SPEC	CLASS
	36	A233	E70XX
36	50	A233	E70XX
50	70	A316	E80XX
70	80	A316	E90XX
80	90	A316	E100XX
90		A316	E110XX

Low hydrogen electrodes shall be used.

NOTE: Column splices may be welded as shown if the bolt hole diameter or pattern preclude the use of specified splice bolts.

DESIGNED  
H. I. GELLERDRAWN  
J. AdamsREVIEWED  
W. Brewer

19-AB-1004.1



SKILLING - HELLE - CHRISTIANSEN - ROBERTSON

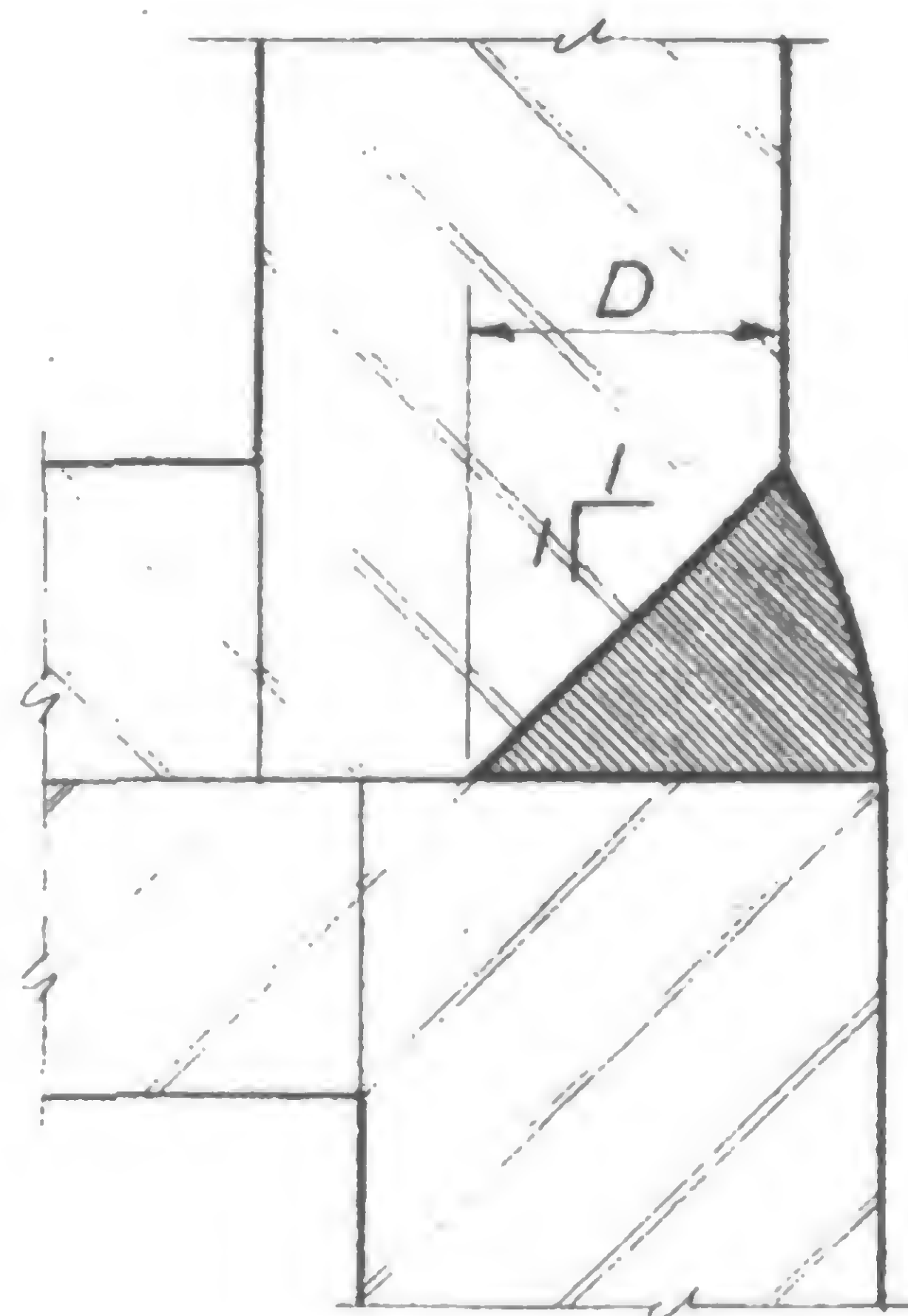
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

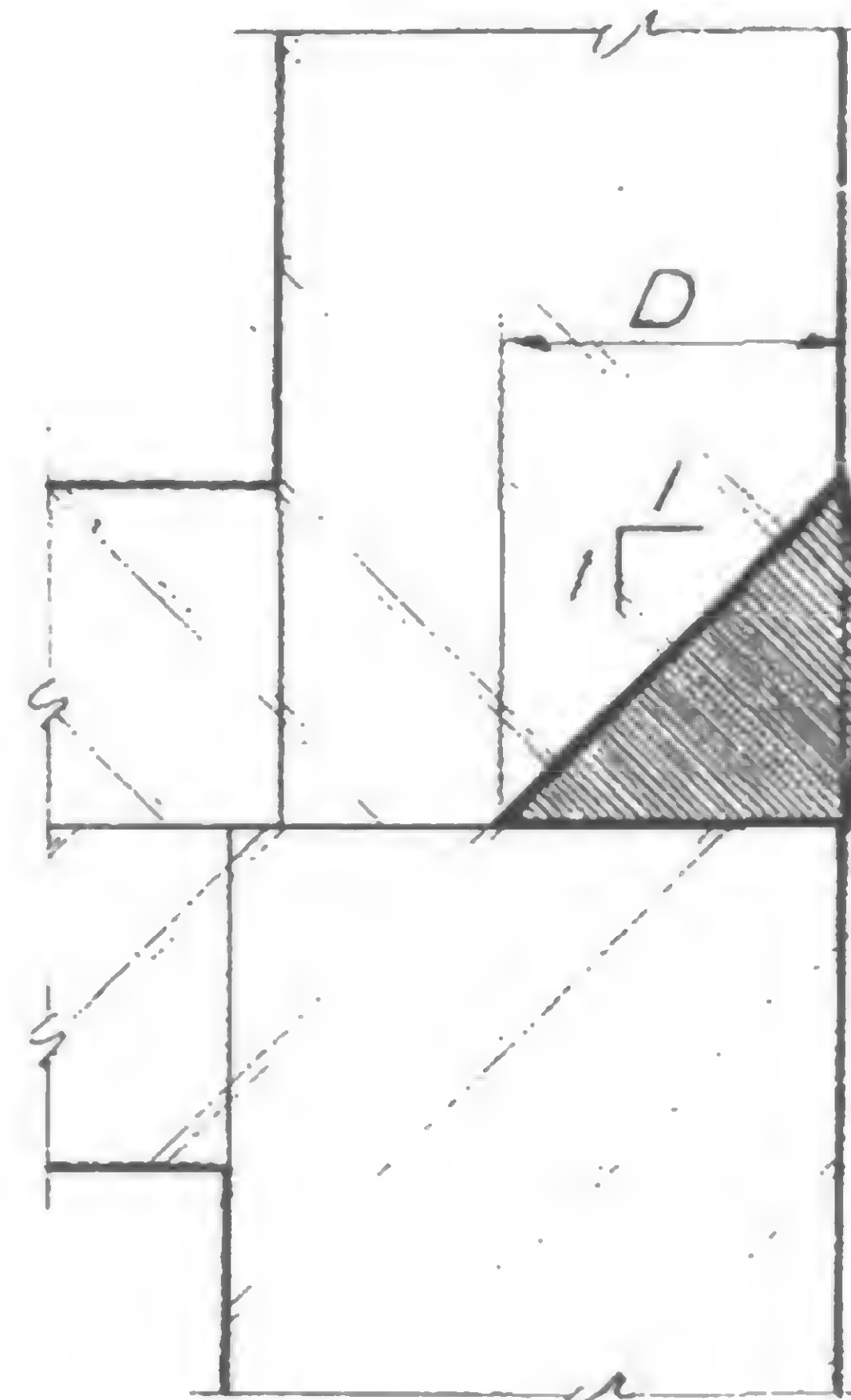
TITLE EXTERIOR WALL - COLUMN SPLICE REPAIR PROCEDURE

DATE 6-20-69

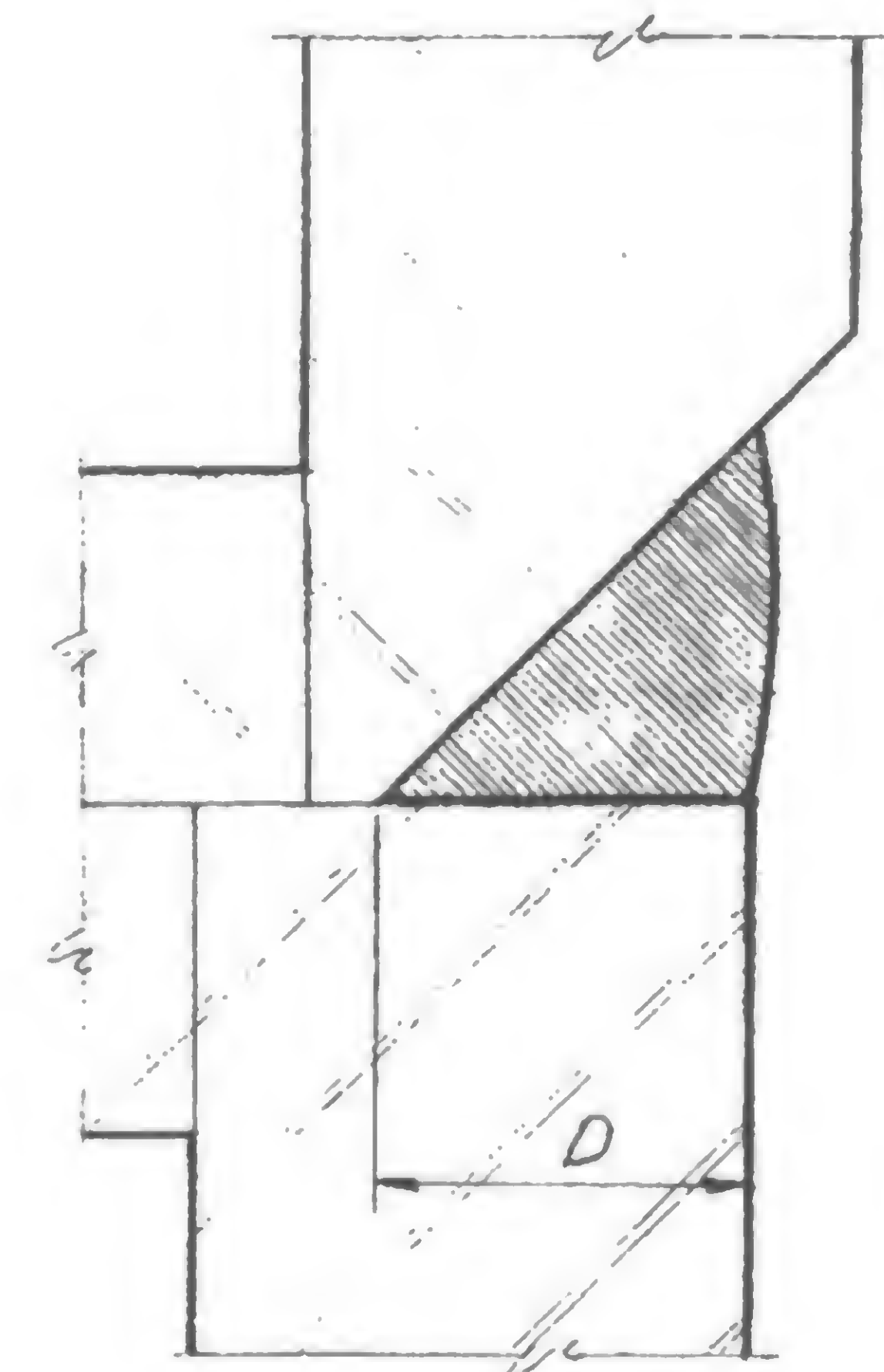
REVISIONS



Case 1



Case 2

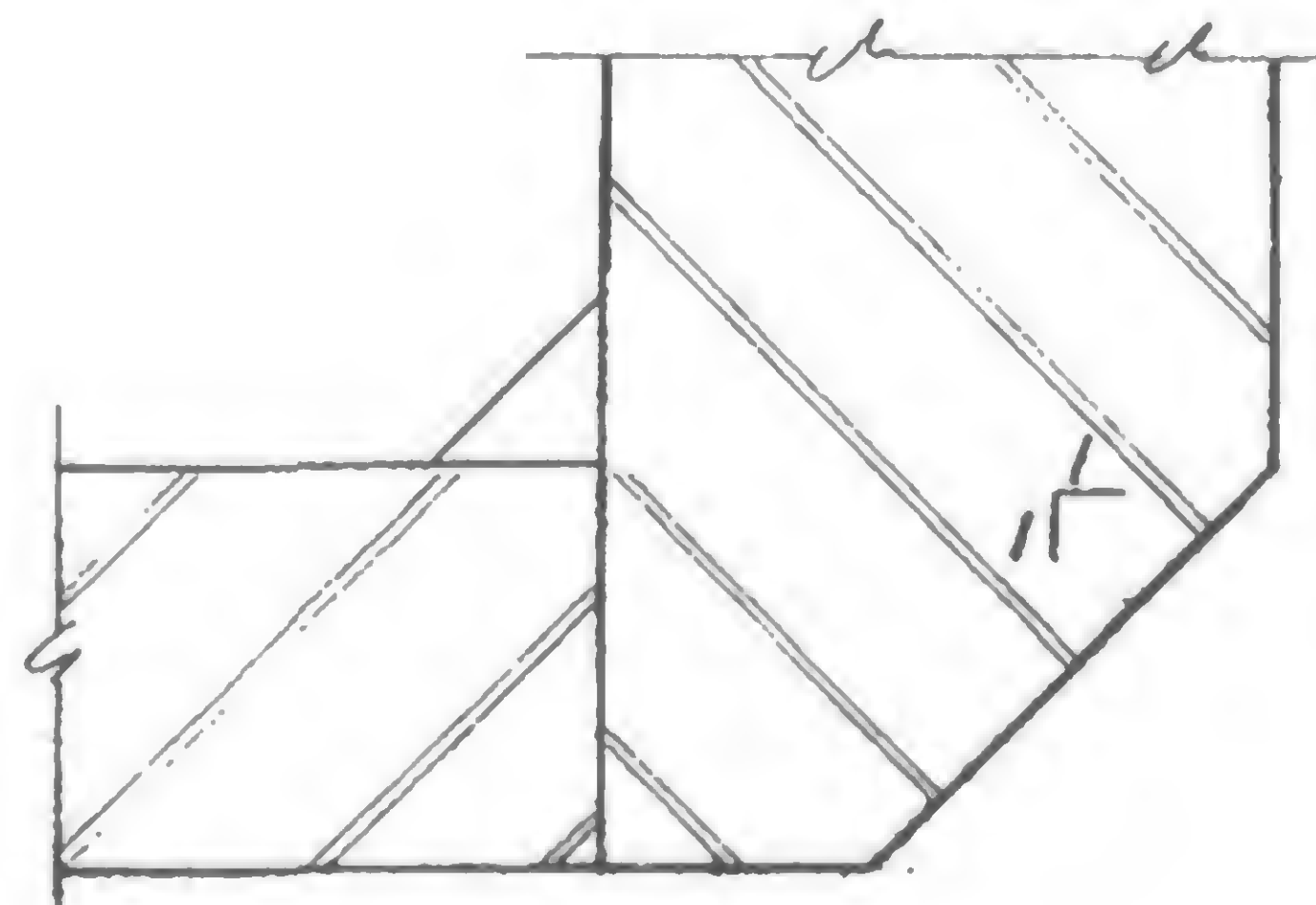


Case 3

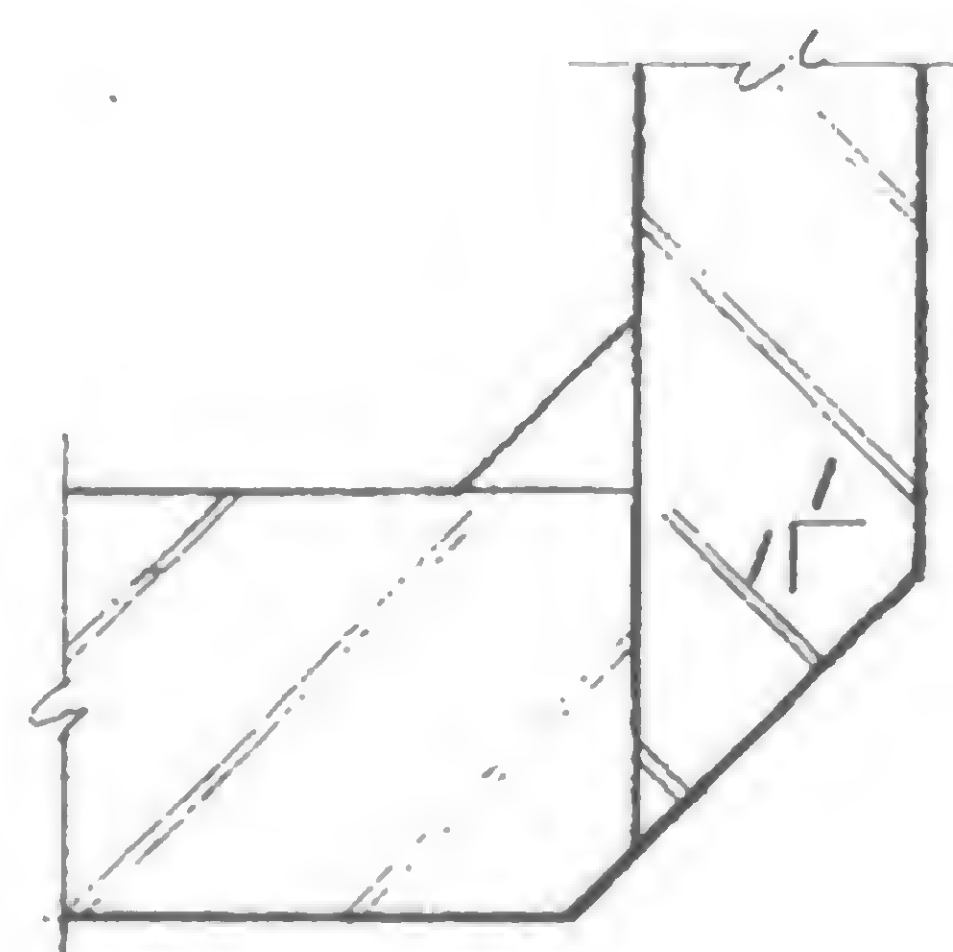
# DETAIL X

Showing field welding of welds #12 & #13

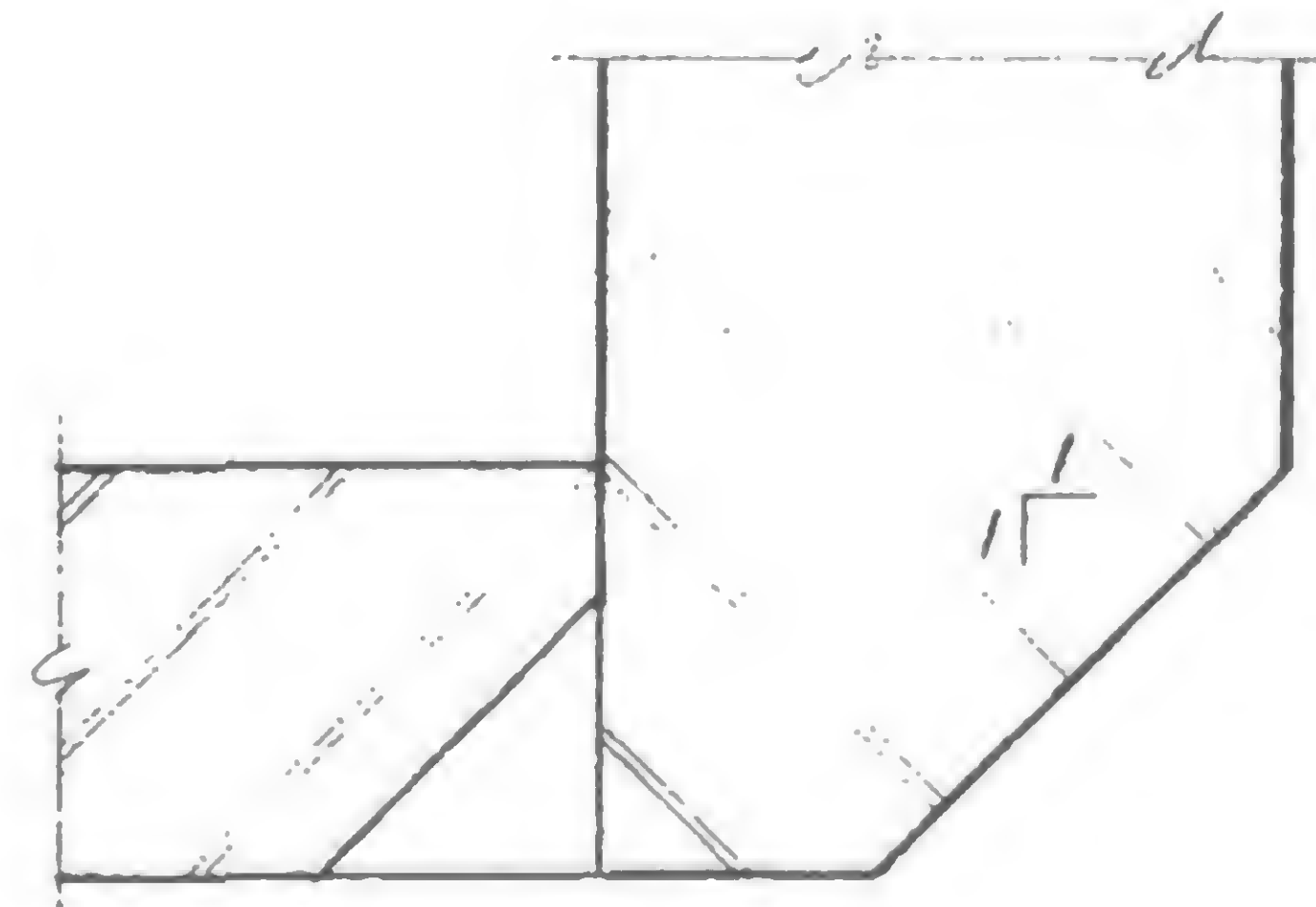
D = Scheduled weld size for weld #12 or #13



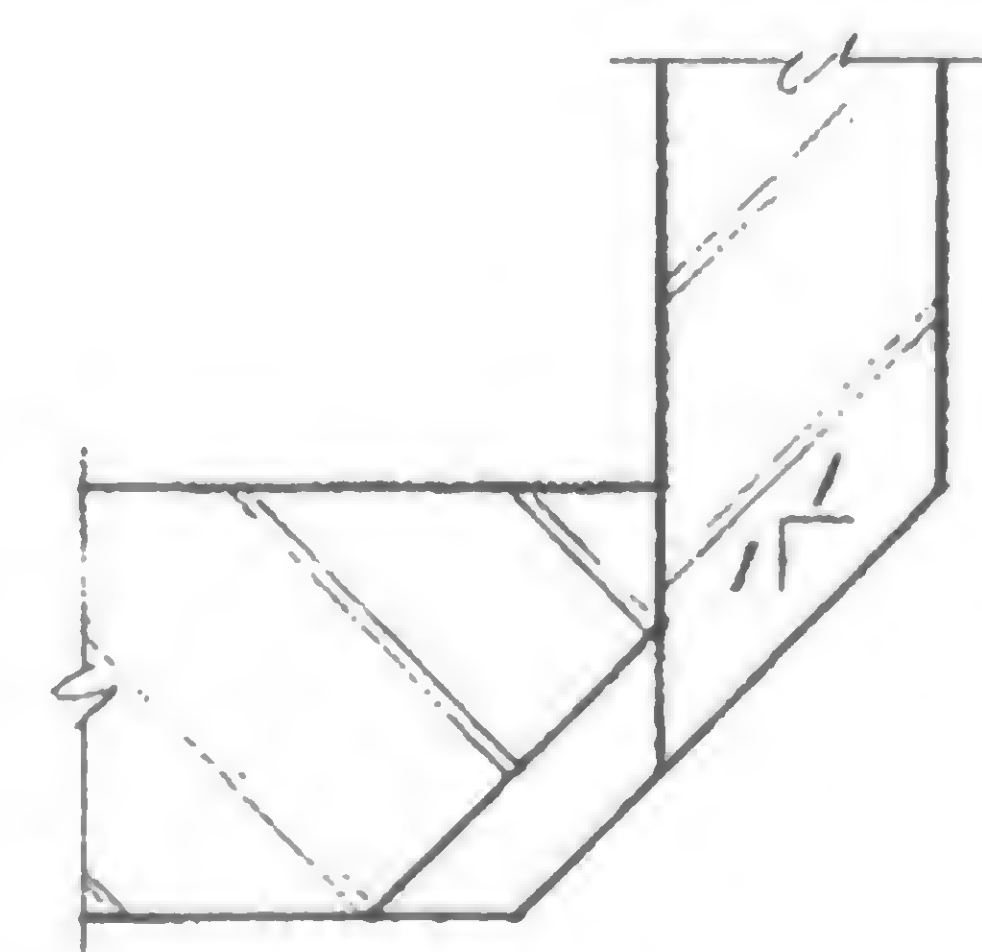
$T1 \text{ or } T2 > \text{weld \#12 or \#13}$



$T1 \text{ or } T2 < \text{weld \#12 or \#13}$



$T3 > \text{weld \#13}$



$T3 < \text{weld \#13}$

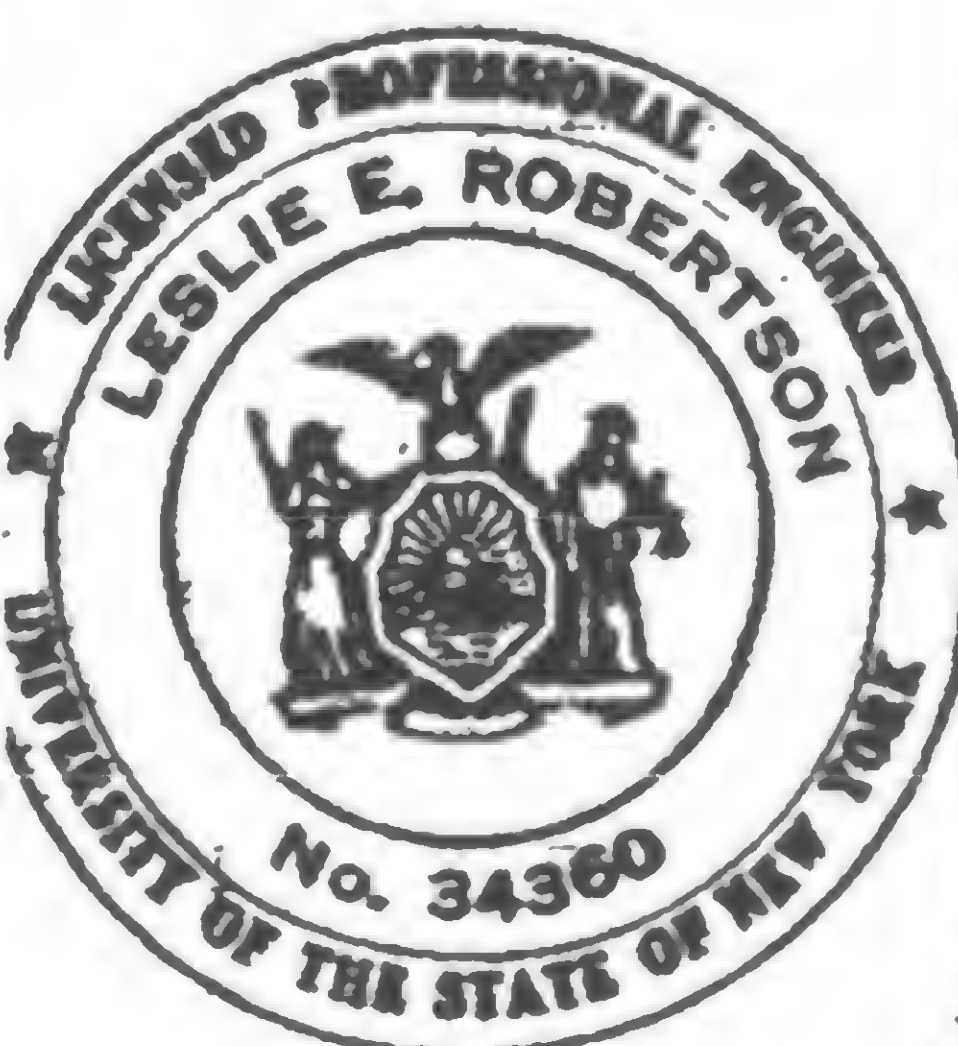
# DETAIL Y

Showing edge preparation for weld #12 & #13

# DETAIL Z

Showing edge preparation for weld #13

19-AB-1004.2



DESIGNED  
H. I. GELLER

DRAWN  
J. Griecius

REVIEWED  
W. Brewer



PROJECT

THE WORLD TRADE CENTER

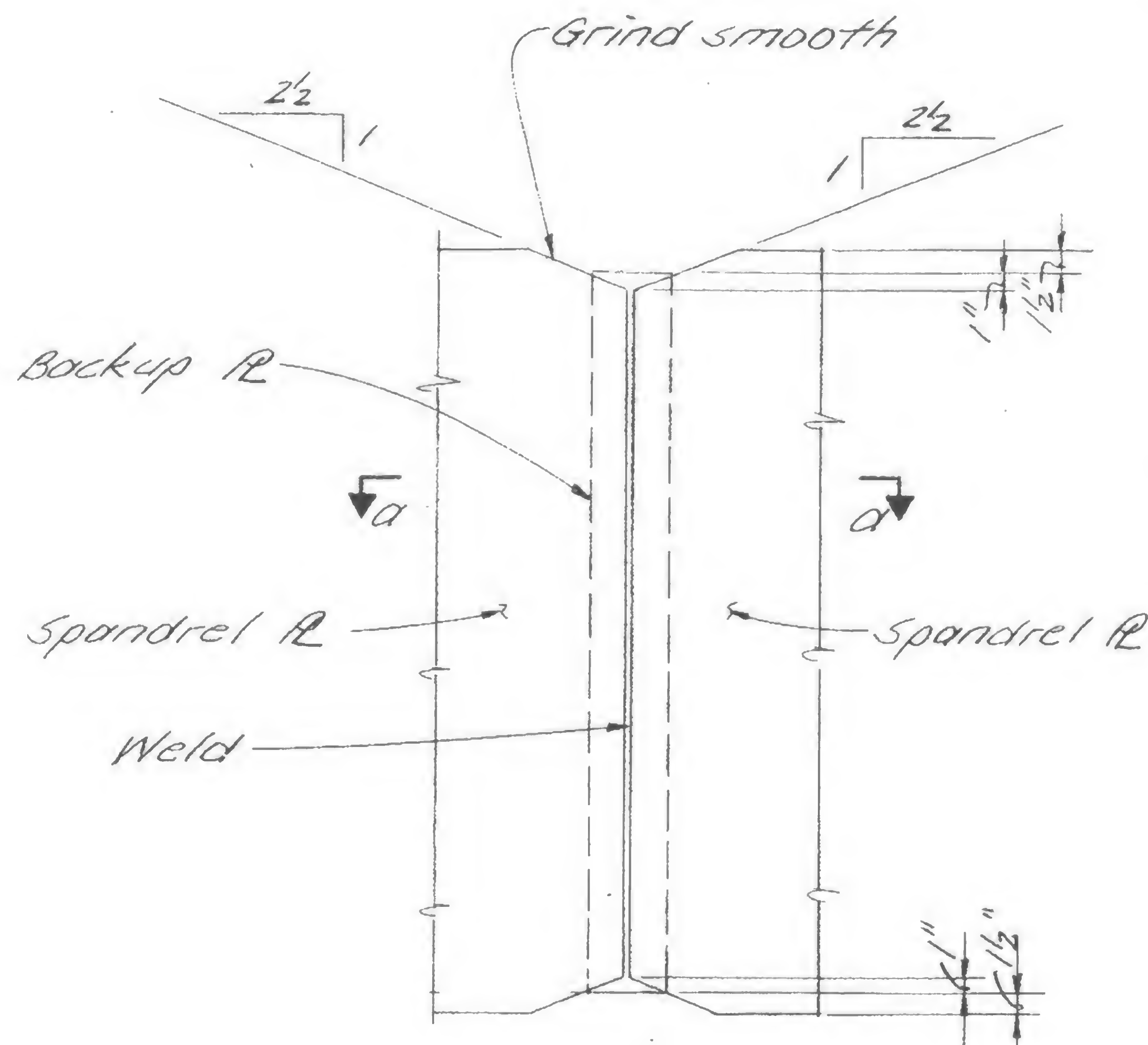
TITLE

EXTERIOR WALL-SPANDREL SPLICE REPAIR PROCEDURE

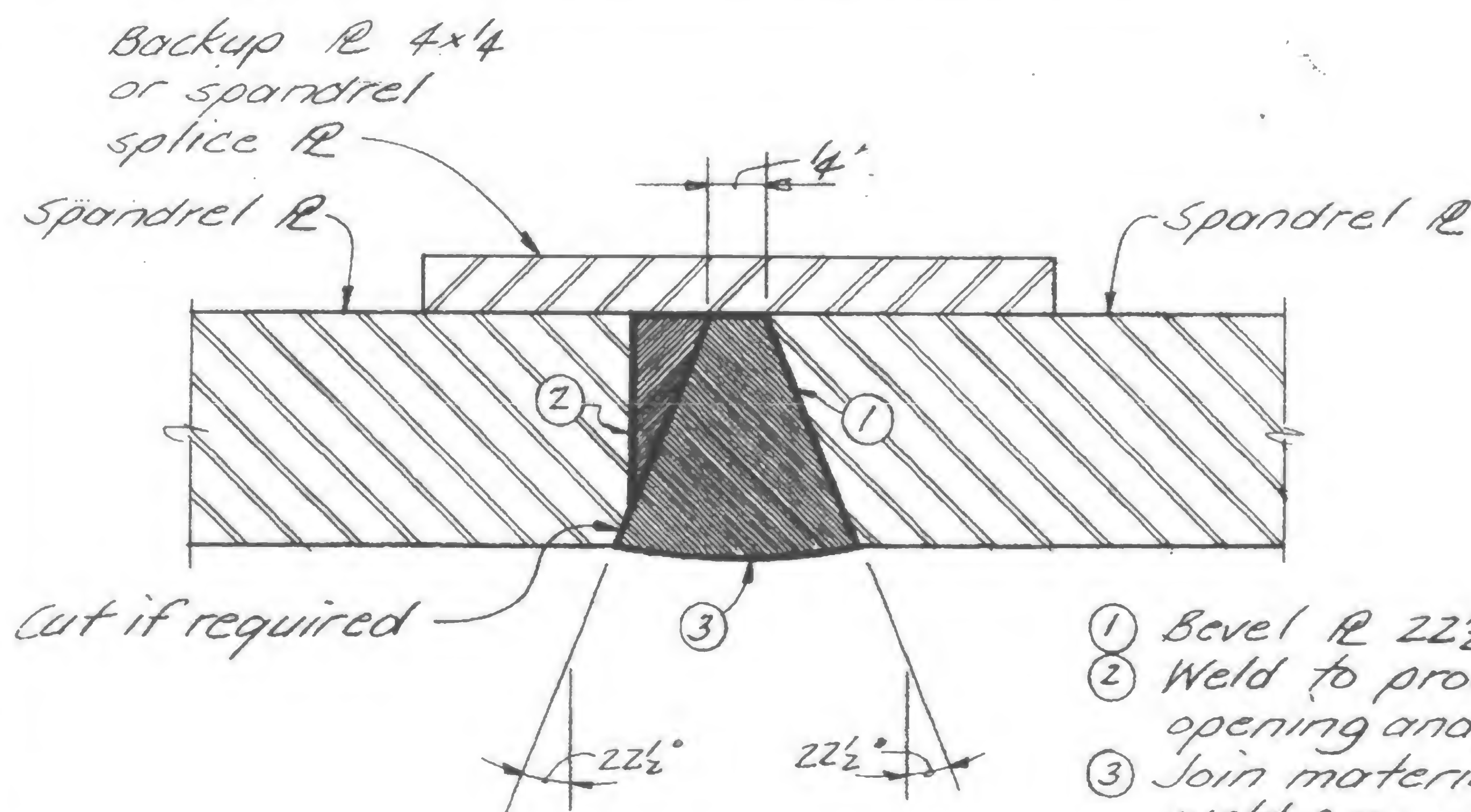
DATE

6-20-69

REVISIONS

NOTES:

- A. Incorrect spandrel splice plates:  
If the dimensions, thickness or hole pattern of the splice plates are incorrect, the plates should be discarded and replaced.
- B. Incorrect hole pattern in spandrel plates:  
Holes in spandrel plates that are not properly positioned should be filled with weld and ground flush. The correct hole pattern should then be drilled.
- C. The spandrel plates may be butt welded as shown in lieu of the above procedures.

WELDED SPANDREL CONNECTIONNotes:

1. Welding electrode shall be determined by the higher  $F_y$  of the spandrel plates. See Welding Electrode Table, 19-AB-1004.
2. Preheat shall be not less than AWS minimum, and shall conform, wherever applicable, to the steel manufacturer's recommendations.

- ① Bevel @  $22\frac{1}{2}^\circ$
- ② Weld to provide  $\frac{1}{4}$ " root opening and  $22\frac{1}{2}^\circ$  bevel.
- ③ Join material by normal weld procedures (AWS BU-2)

Section a-a

DESIGNED

H.I. GELLER

DRAWN

J. Adams

REVIEWED

W. Brewer

19-AB-1005



PROJECT

THE WORLD TRADE CENTER

TITLE

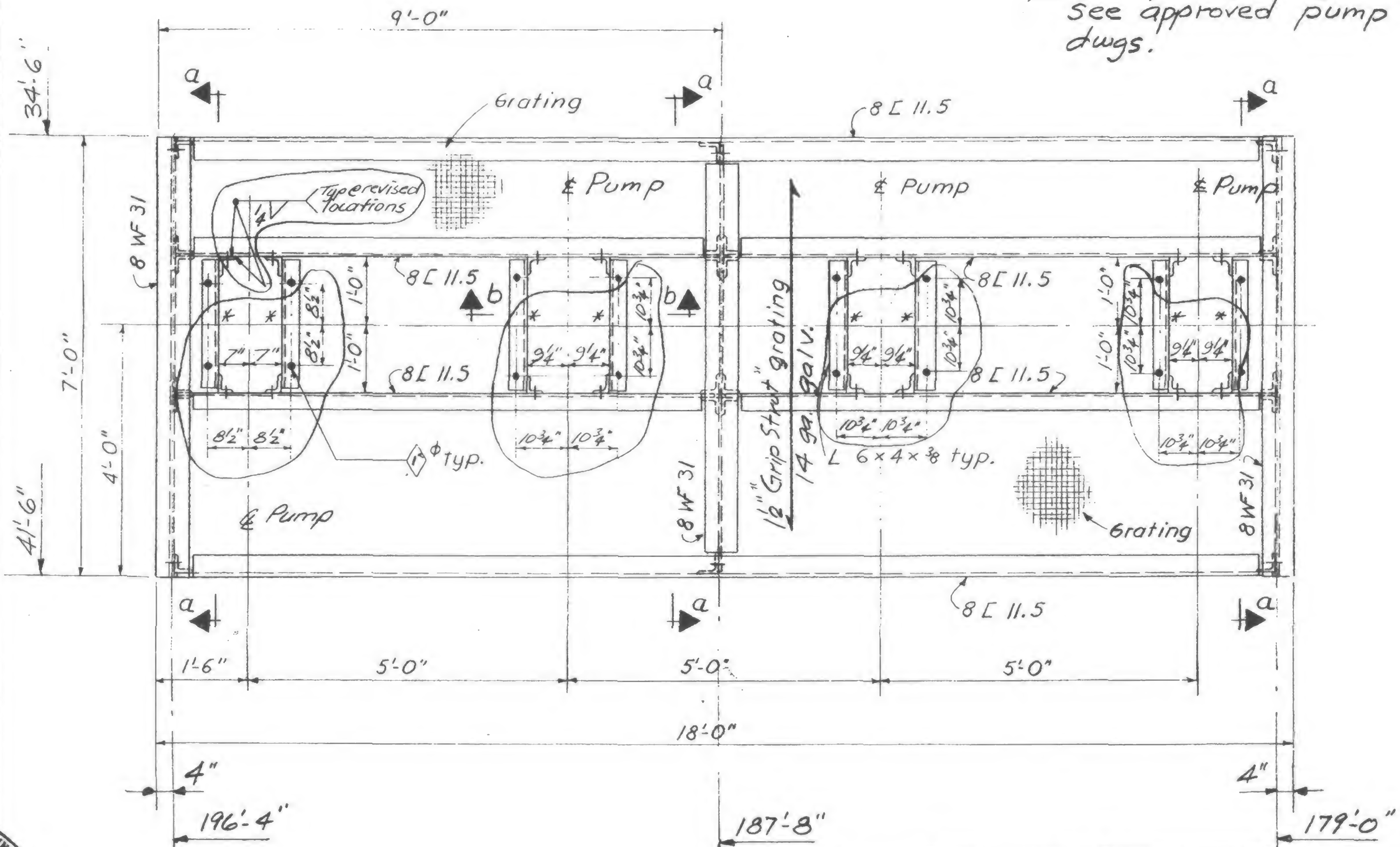
PUMP PLATFORM - EL 294 - TOWER A

DATE

8/7/69

REVISIONS

For opening in grating  
See approved pump shop  
dwgs.



## REVISIONS:

- ① Provide new 6x4x3/8 L and end clips. Connect to support Ls by field welds as shown.
- Revised pump bolt locations.

Reference Dwg: 6-AB2-30





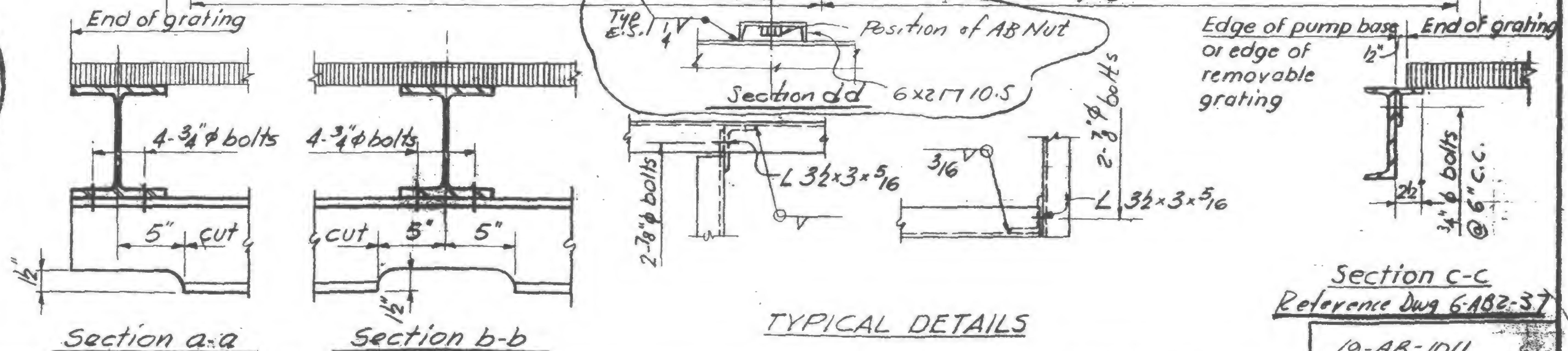
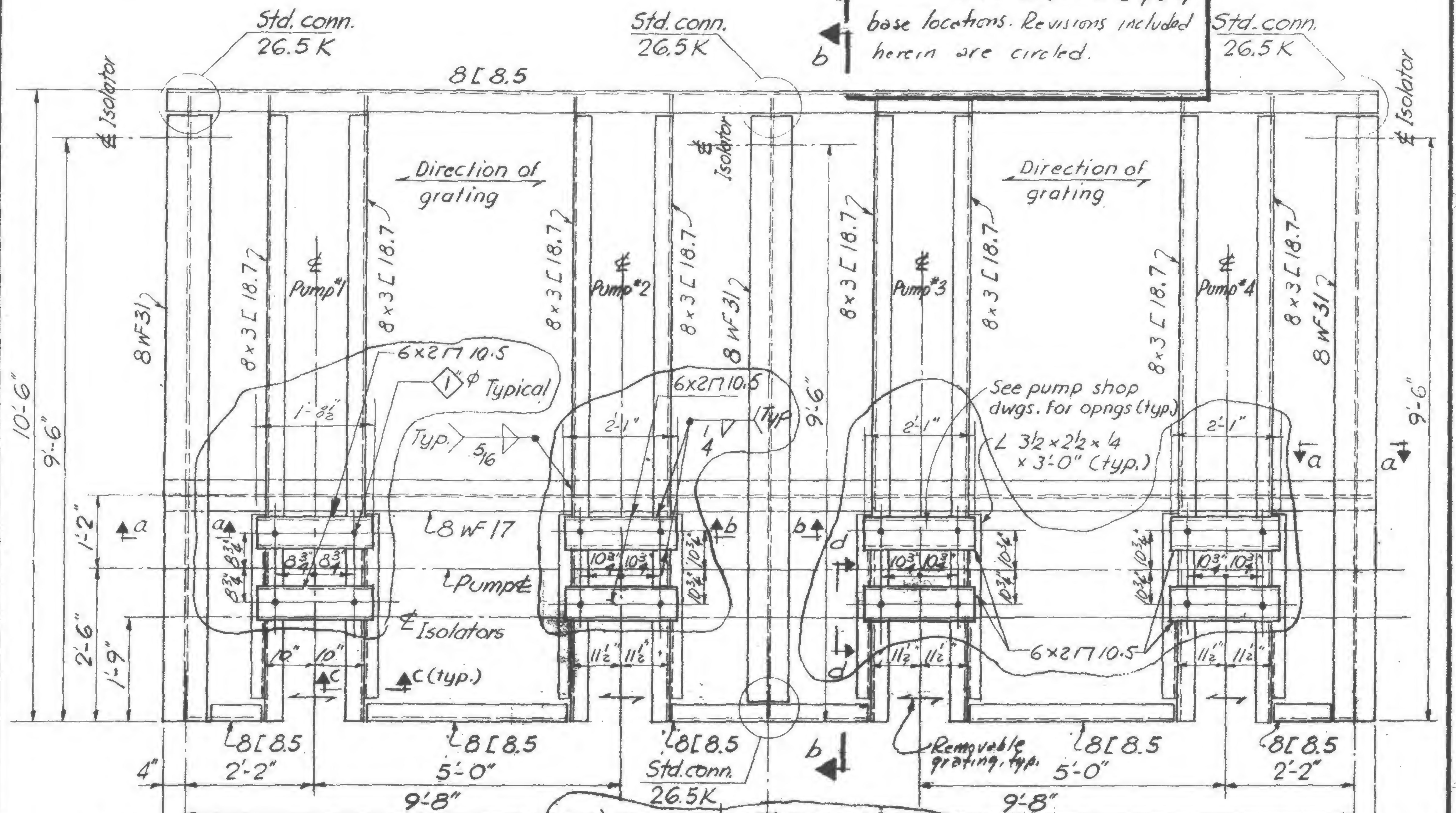
## REVISIONS

8/29/69

**REVISIONS:**

Revisions. Add 6x27's @ pump base locations. Revisions included herein are circled.

Std. conn.  
26.5 K

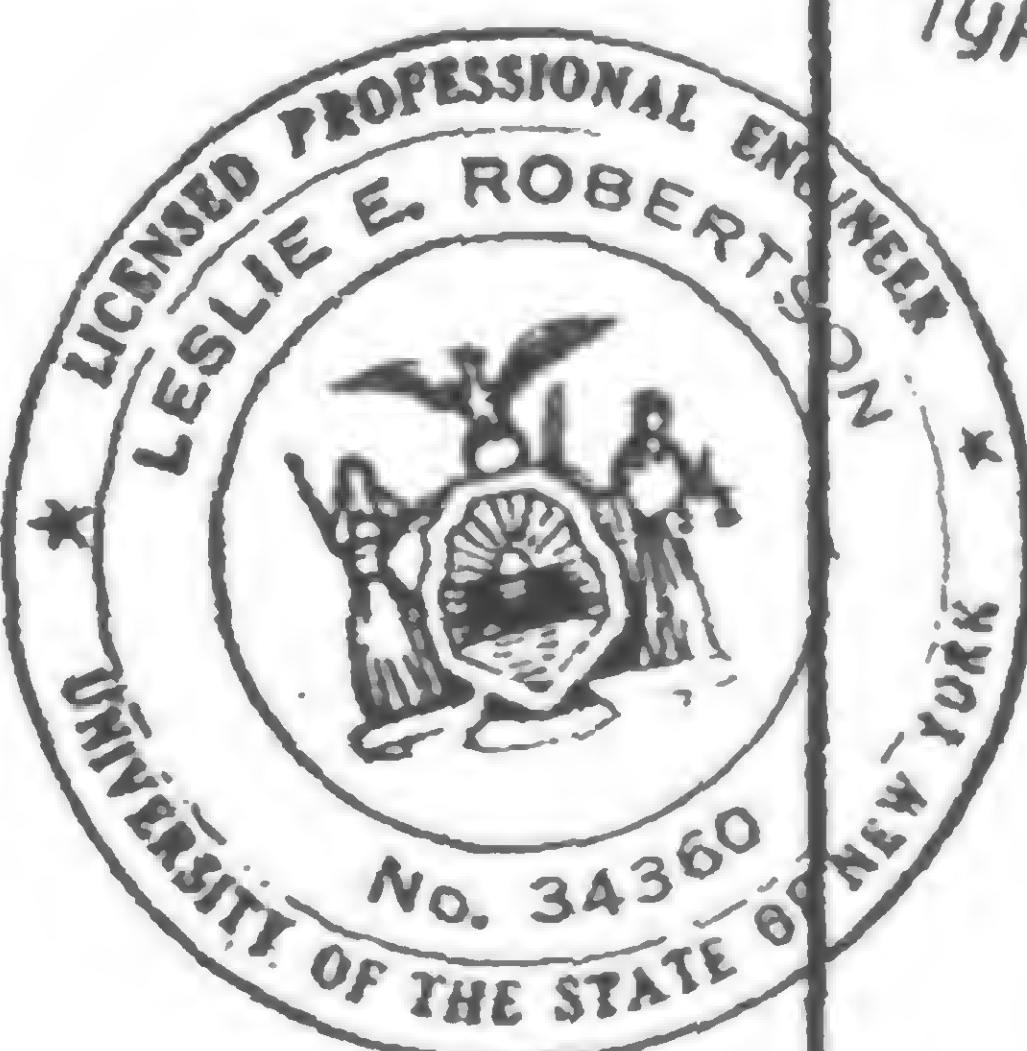
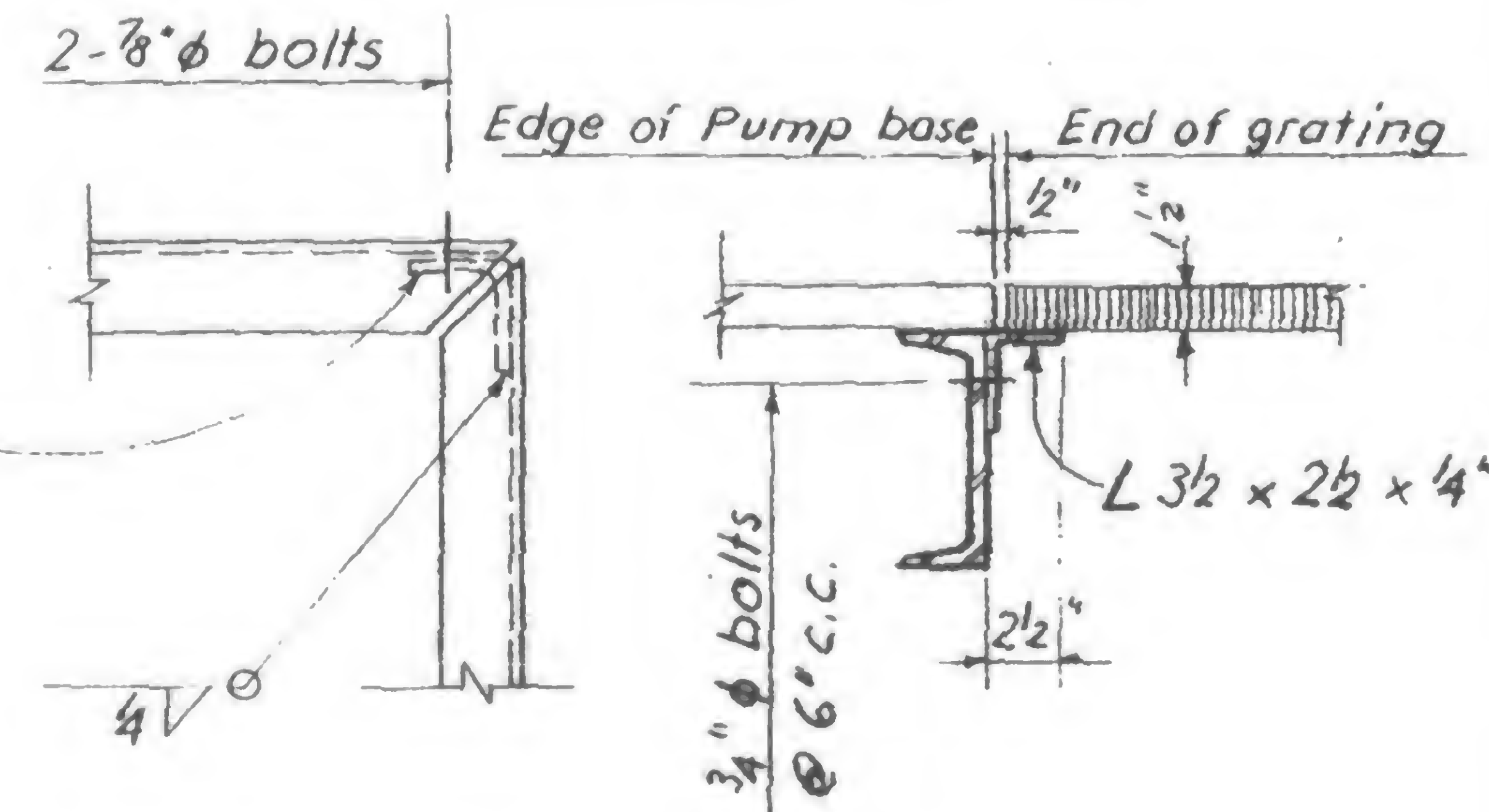
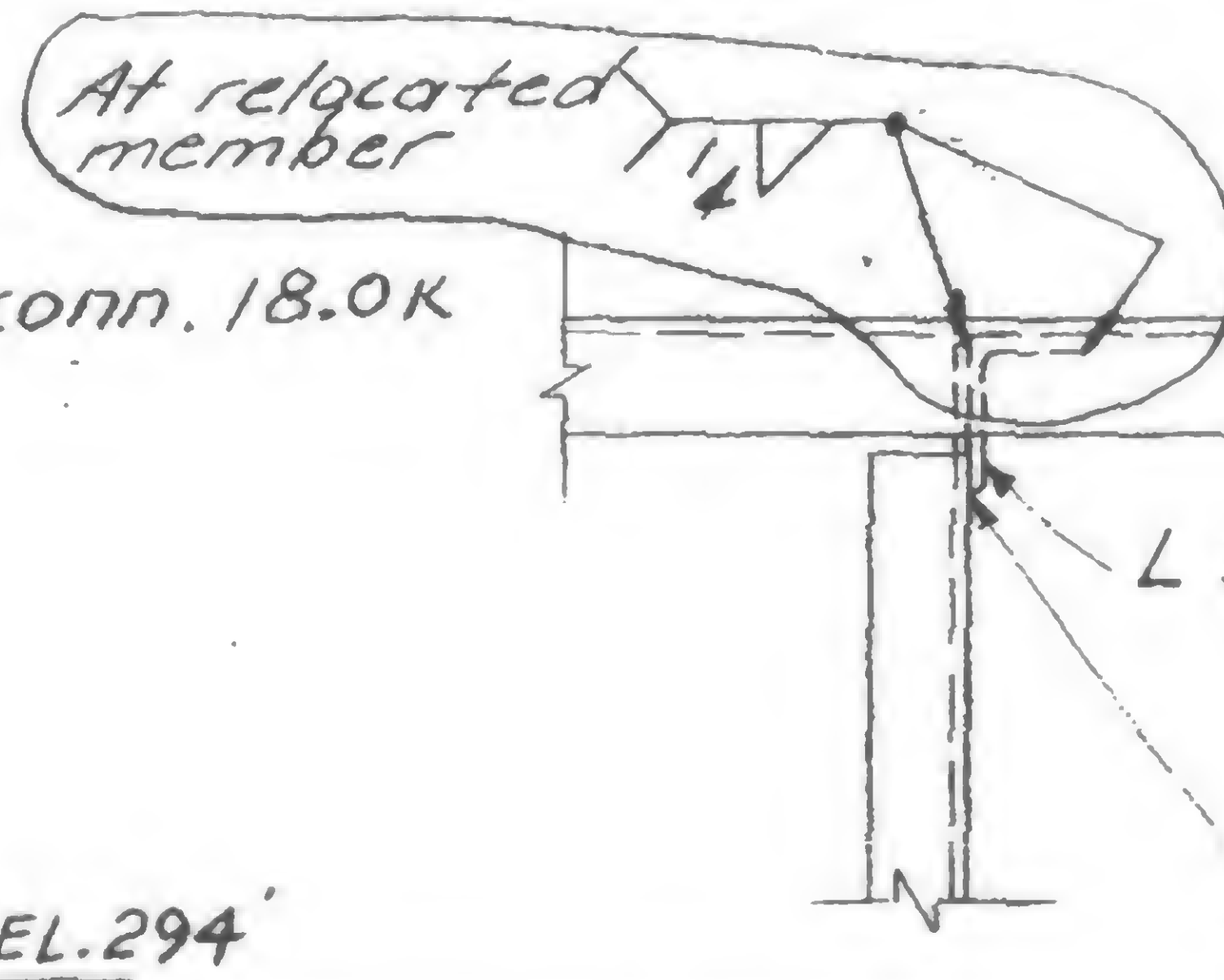
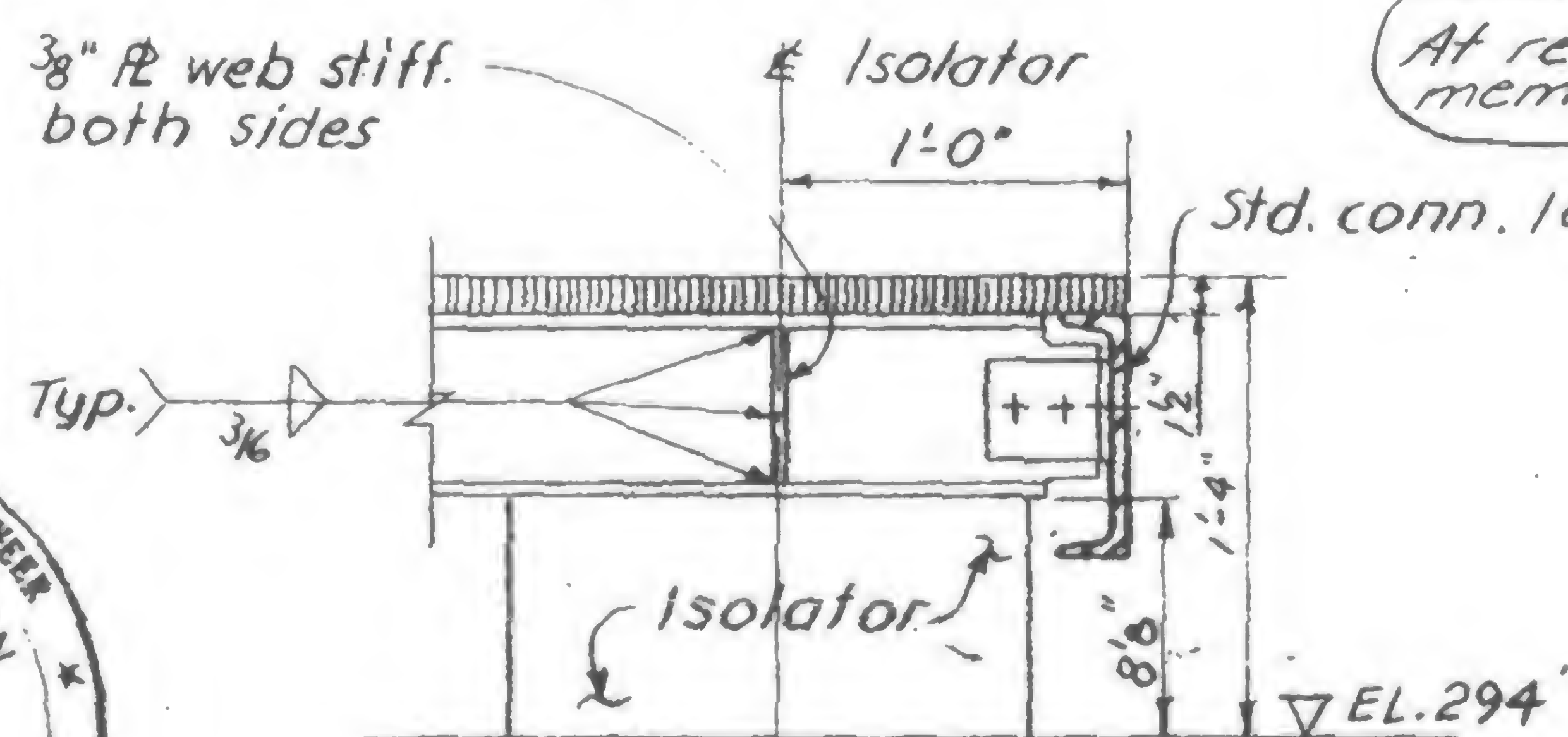
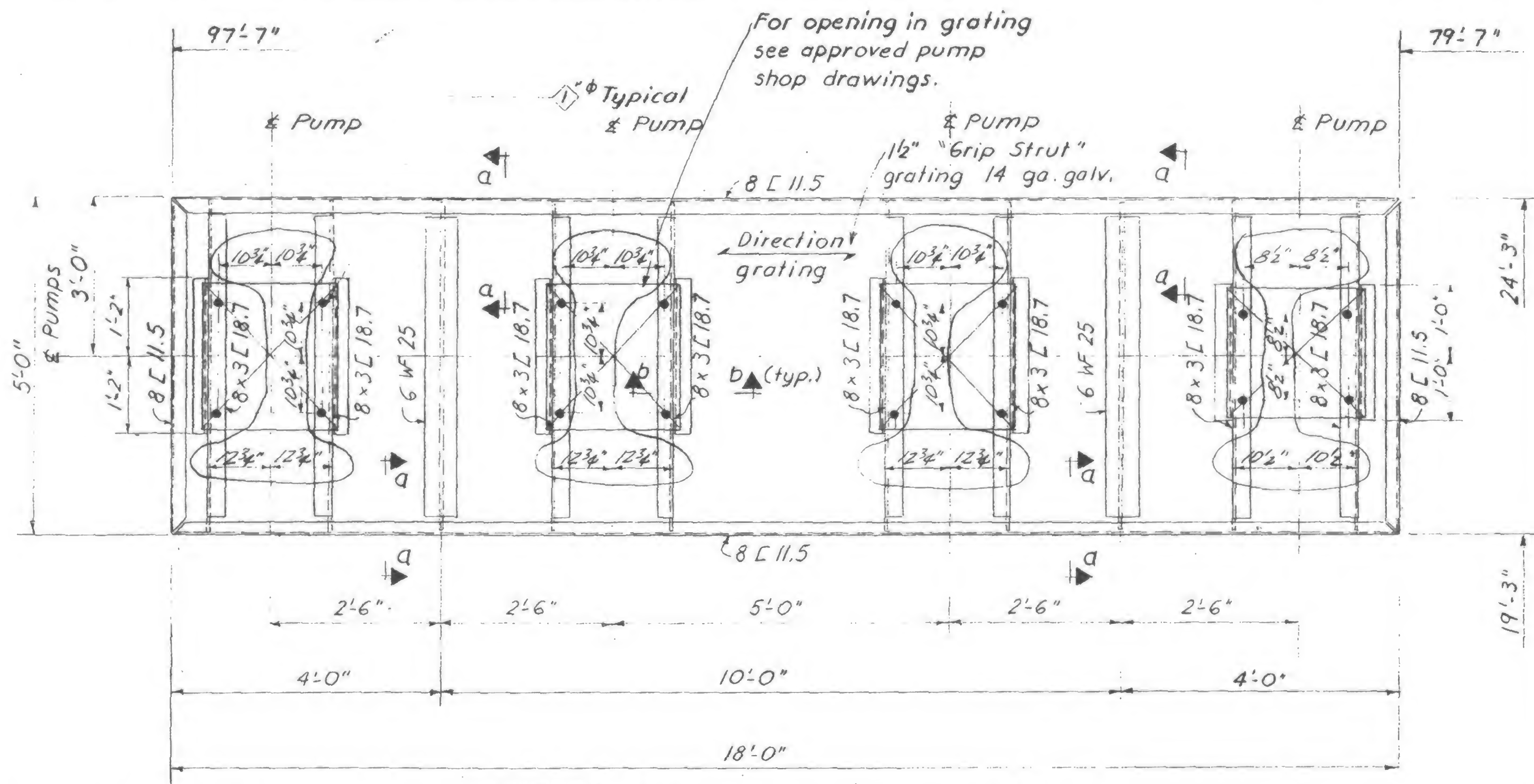


Section C-C  
Reference Dwg 6-ABZ-37

19-AB-1011



REVISIONS



Section a-a

Revision work:  
 Revised pump bolt locations Connect relocated members by field welding as shown.

Typical Details

Section b-b

Reference Des 6-ABZ-41

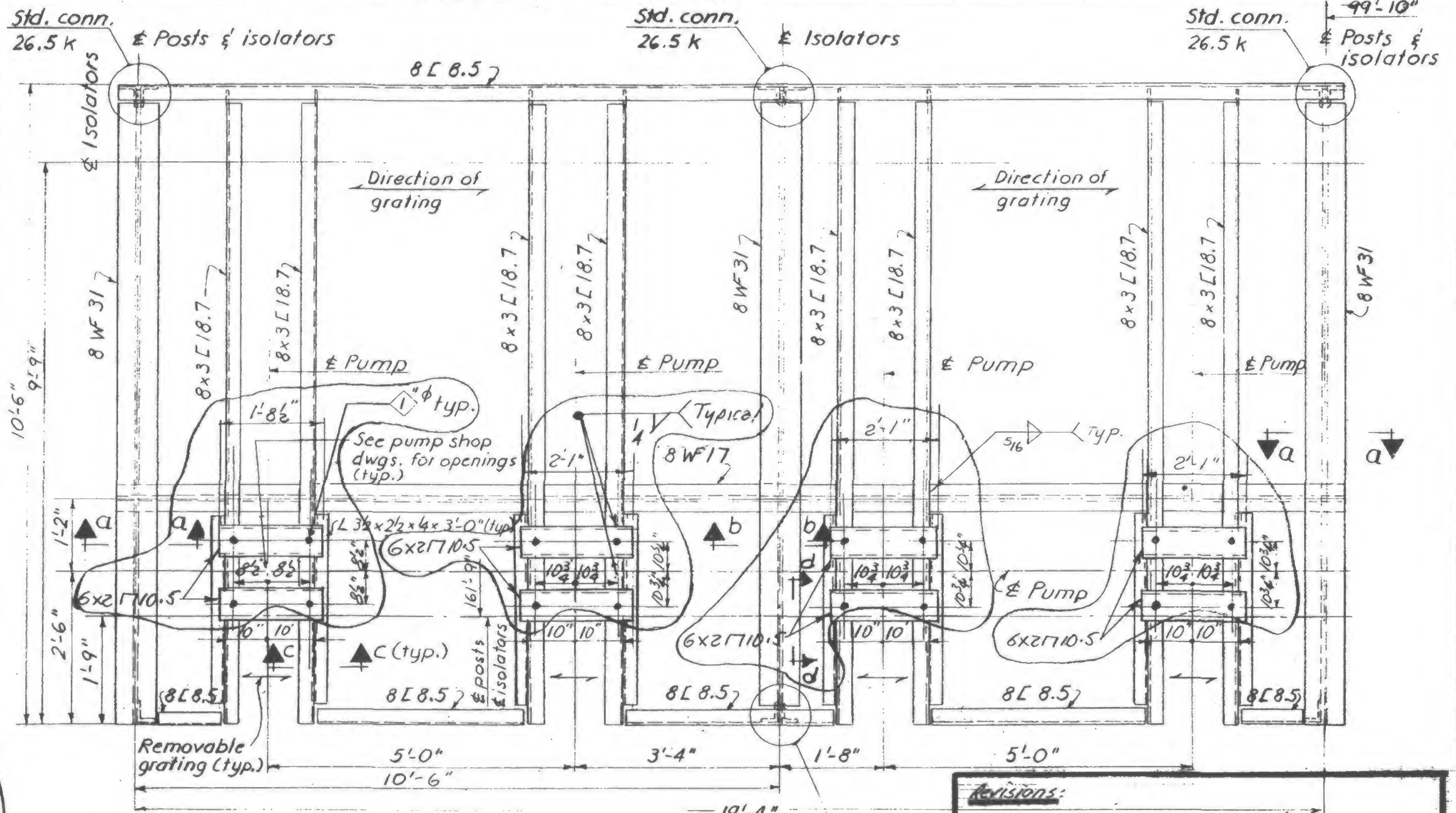






## REVISIONS

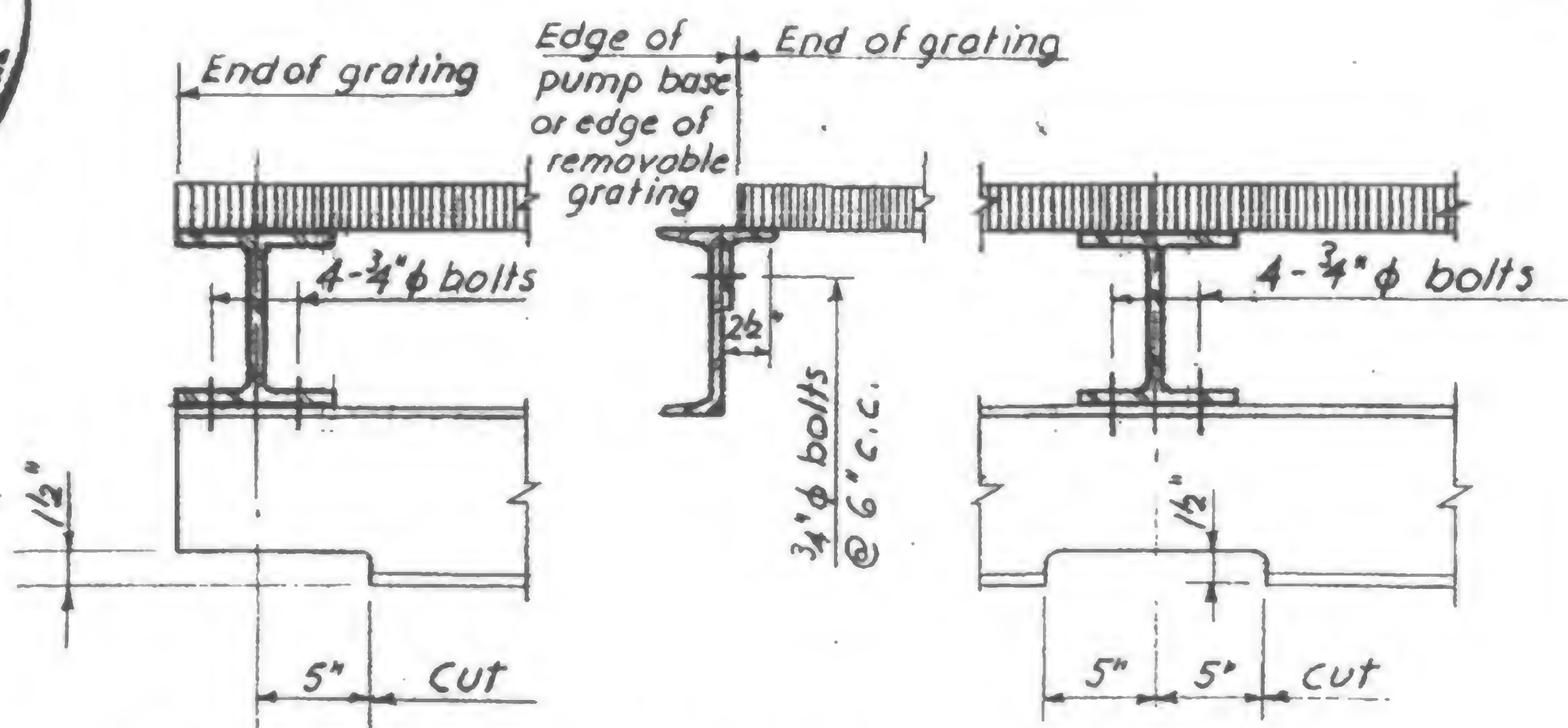
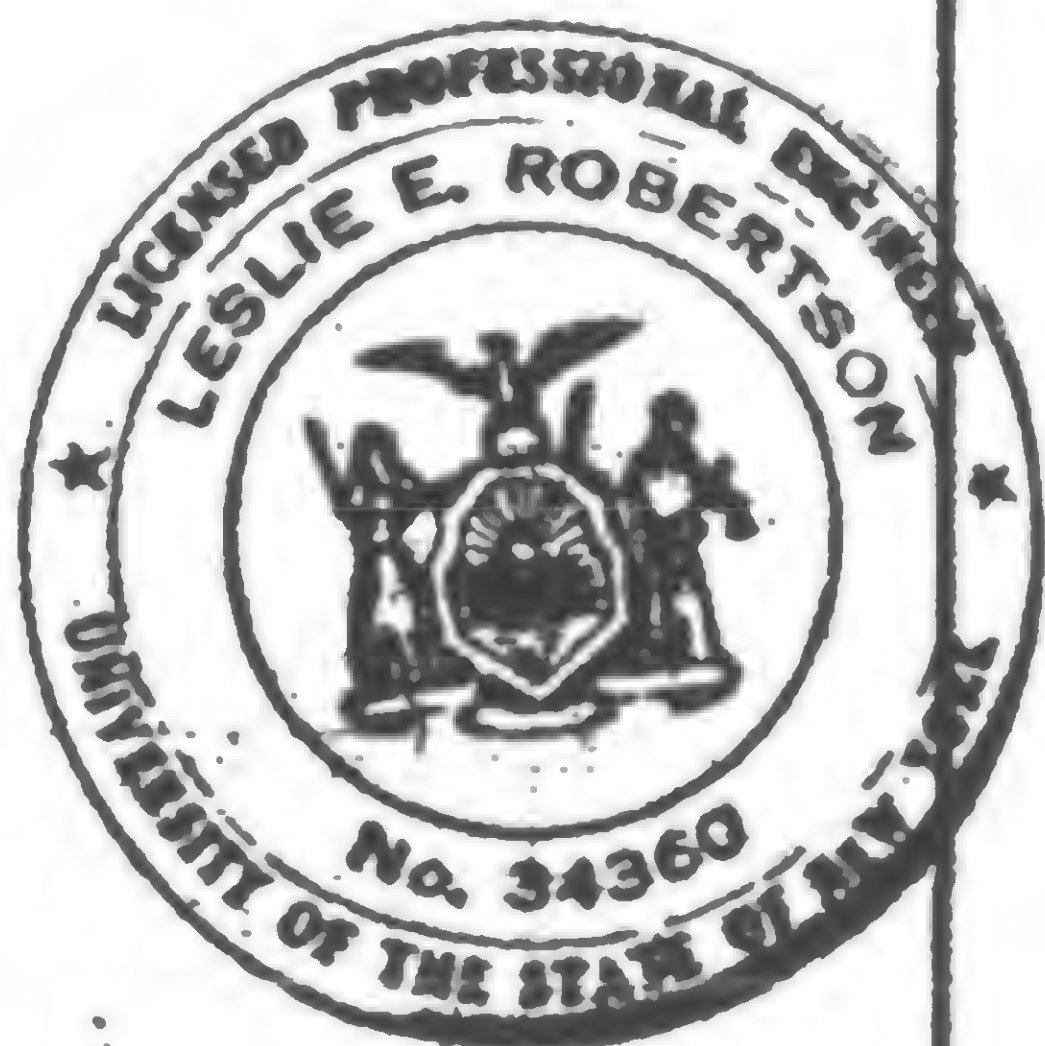
8/29/69



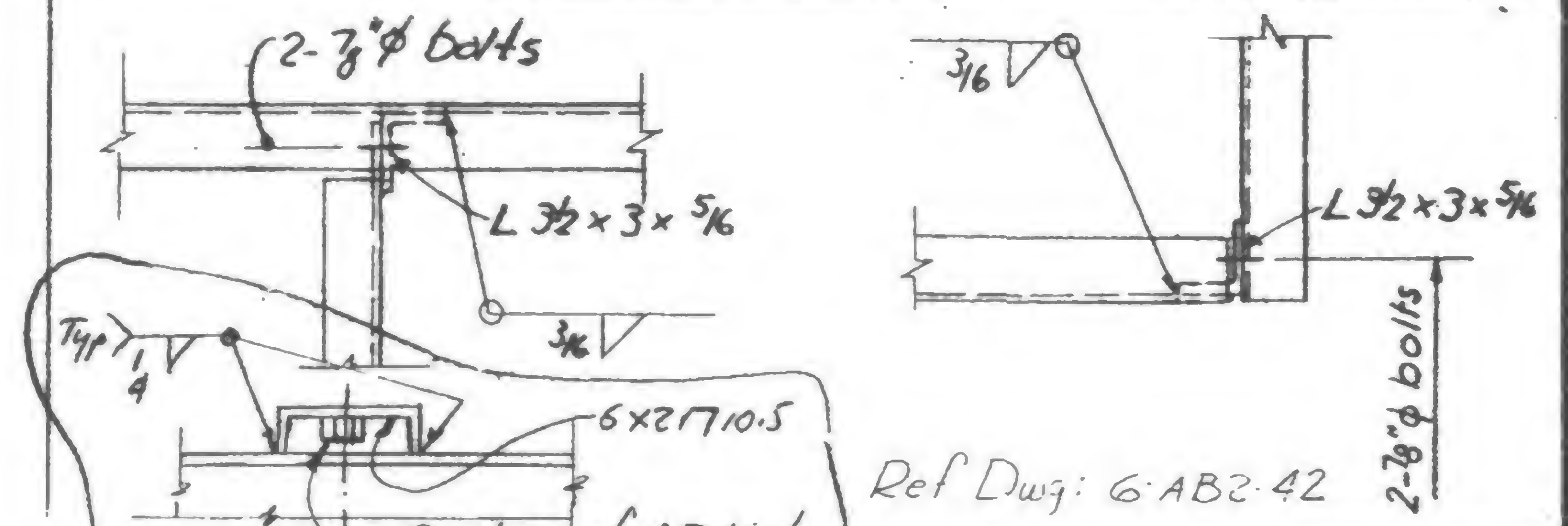
Revisions:

Std. conn.  
26.5 k

Add 6x277's @ pump base locations. Revisions included herein are circled



Section a-a    Section c-c    Section b-b



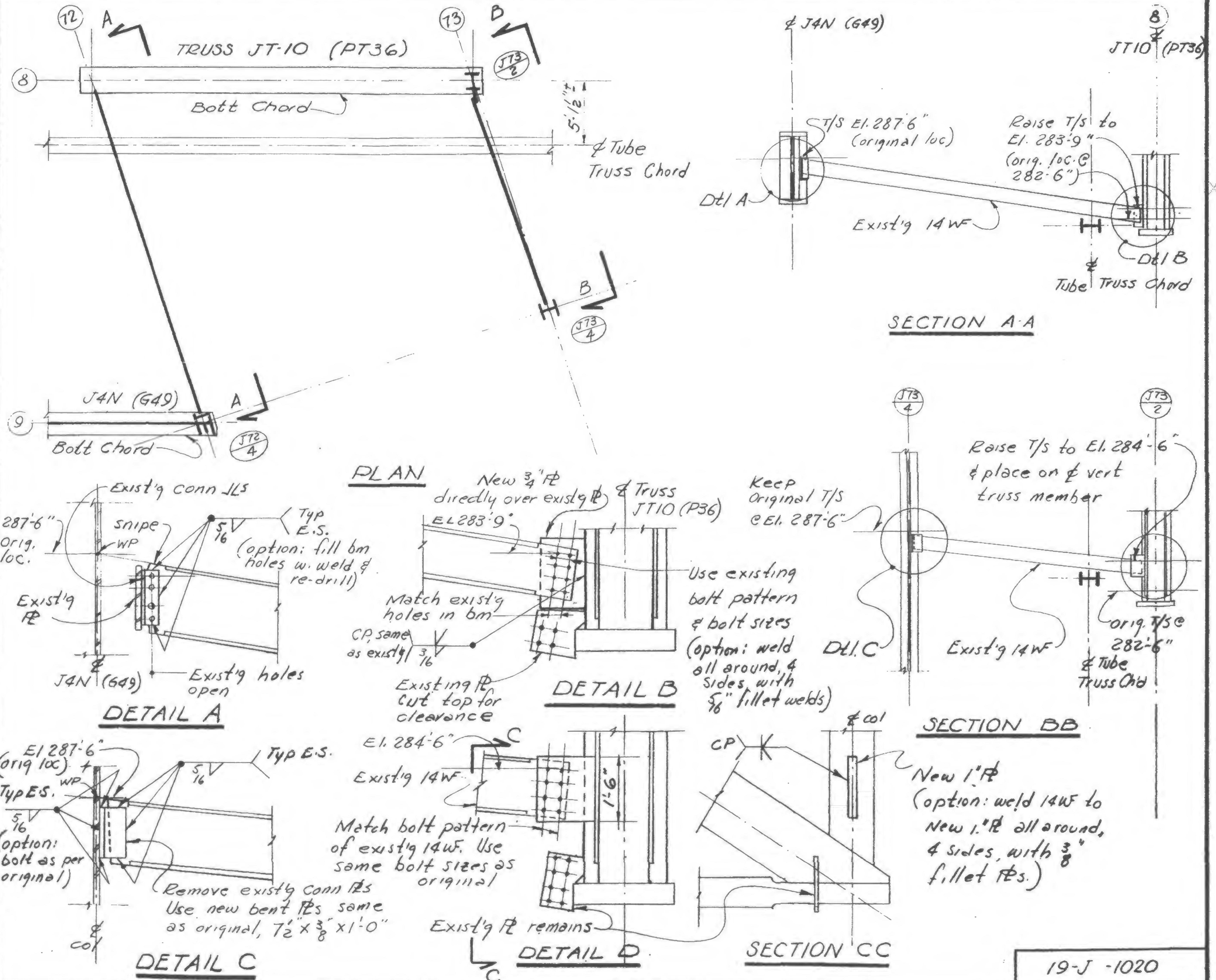
Section dd Typical Details

Ref Dwg: 6-AB2-42

19-AB-1013



## REVISIONS



19-J -1020



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT

THE WORLD TRADE CENTER

TITLE

STRENGTHENING OF BEAM TO GIRDER CONNECTION

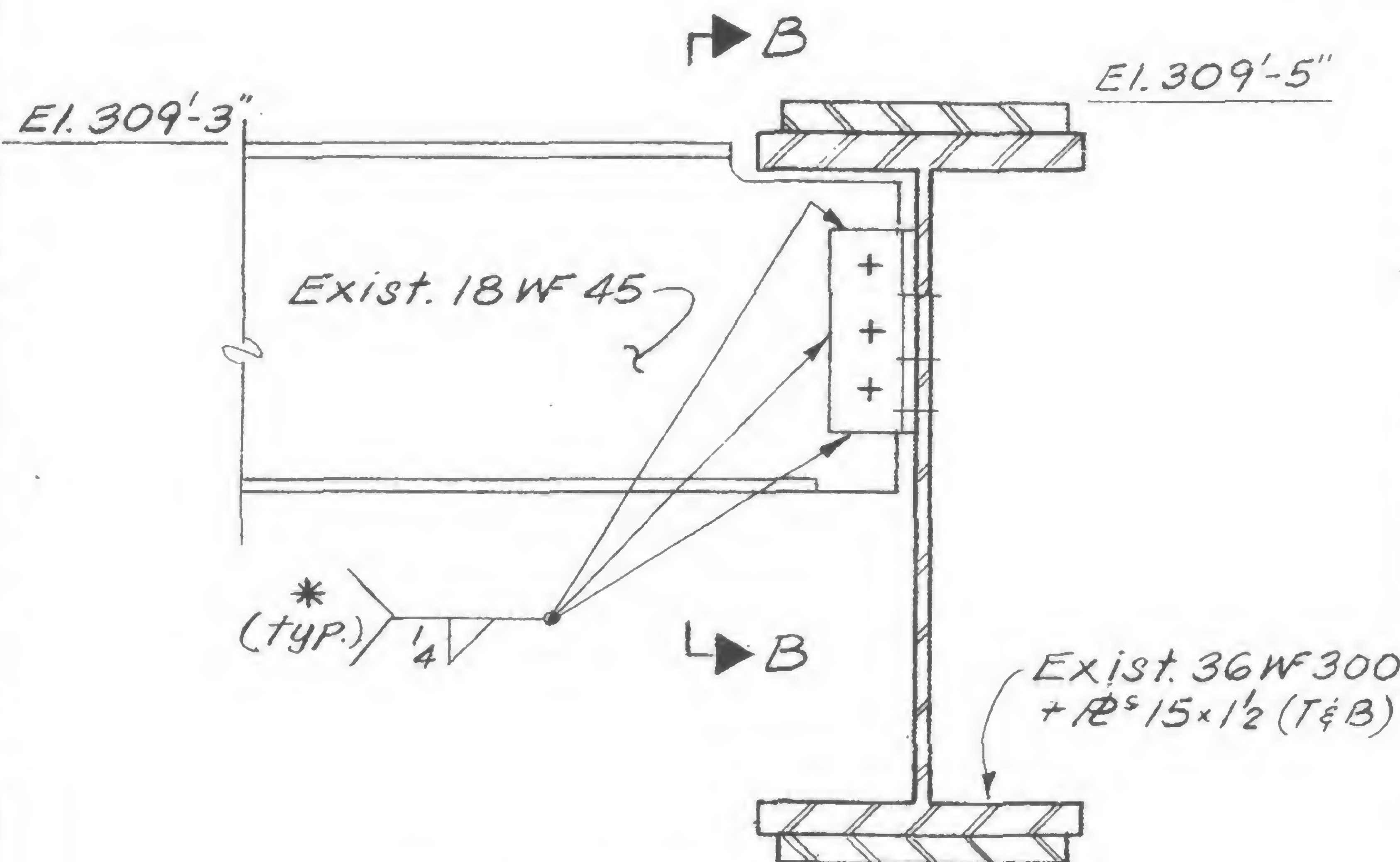
DATE

10-17-69

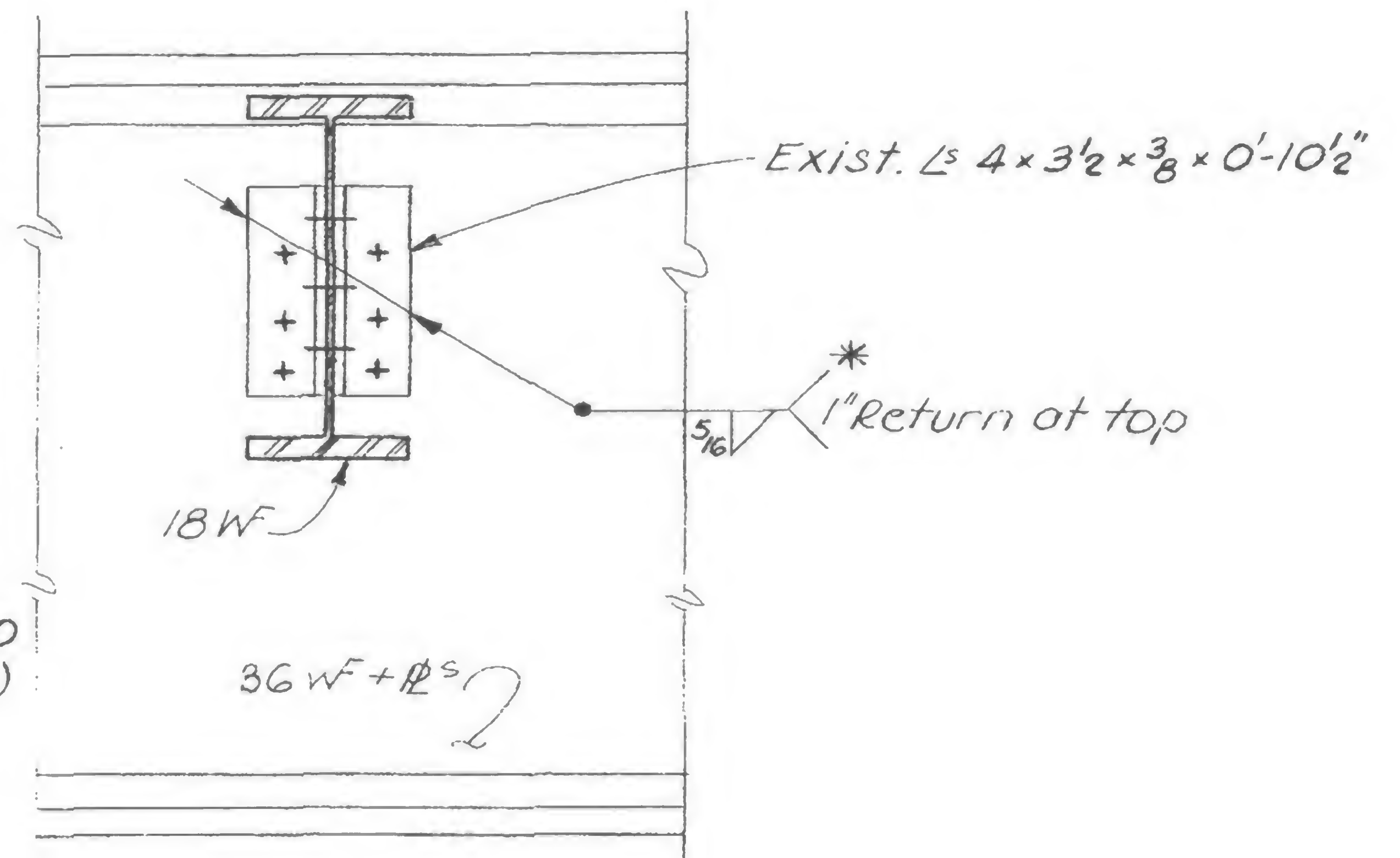
REVISIONS

Due to widening of work-platform  
to 52'-0" — North of Tower 'B'

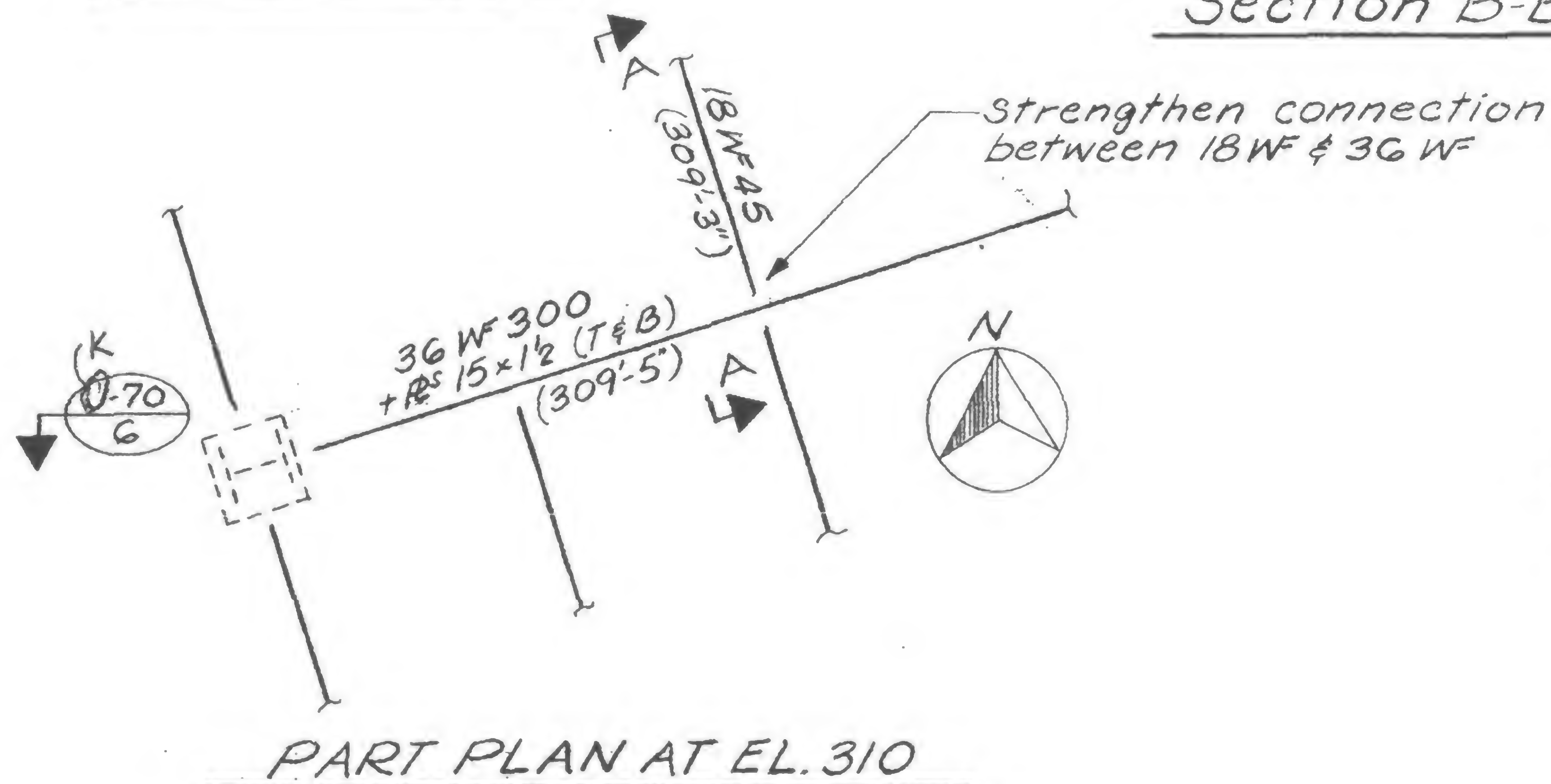
(Change No. 503.100)



Section A-A



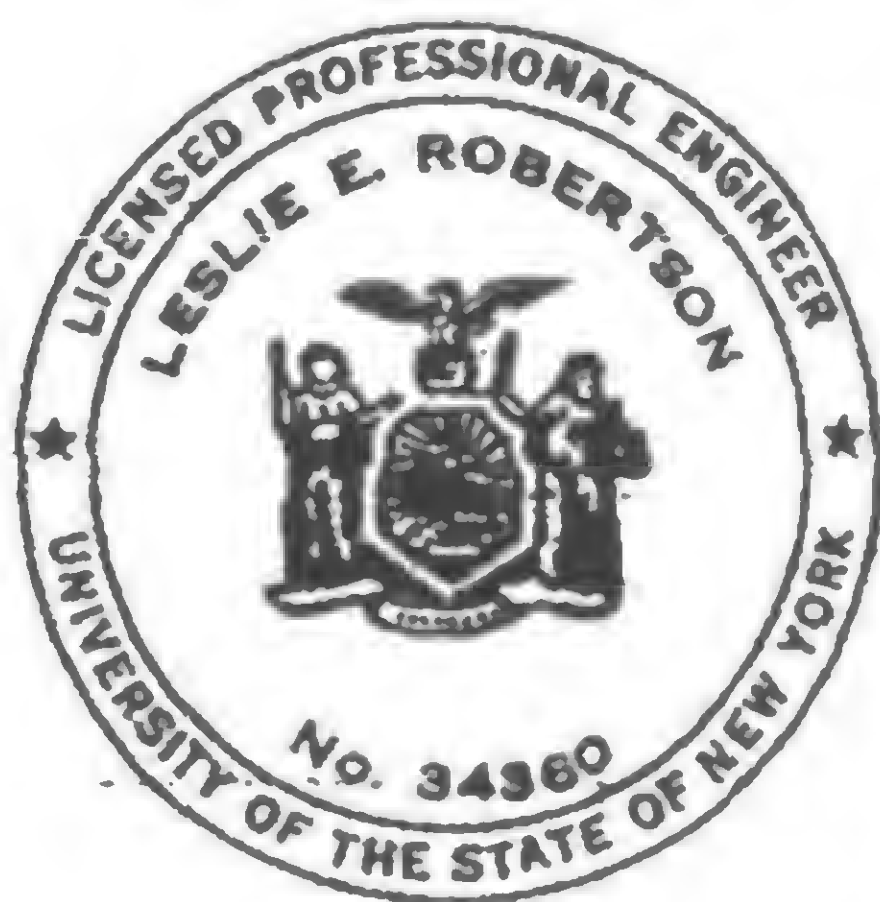
Section B-B



PART PLAN AT EL. 310

Notes:

1. \* — added welding
2. All welds to be E70xx



DESIGNED

DRAWN

S.C.

REVIEWED

E.L.

19-K-1025



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

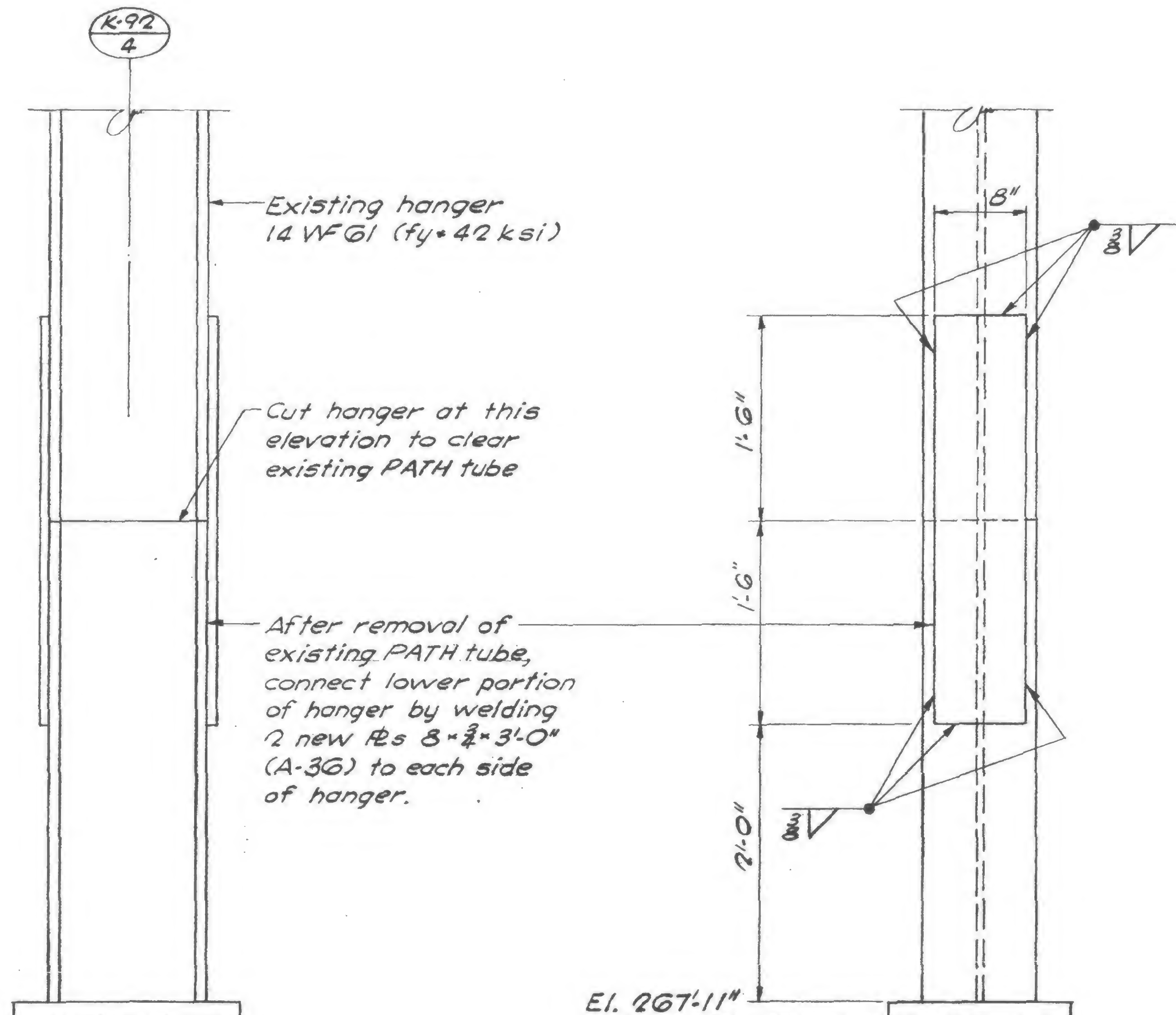
Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE MODIFICATION OF HANGER IN SOUTH PROJ.  
TO CLEAR EXISTING PATH TRACK (WTC-230.00)

DATE 11-11-69

REVISIONS

NOTES:

1. All welds to be E70 XX



DESIGNED

DRAWN

G.K.

REVIEWED

E.L.

19-K-1026



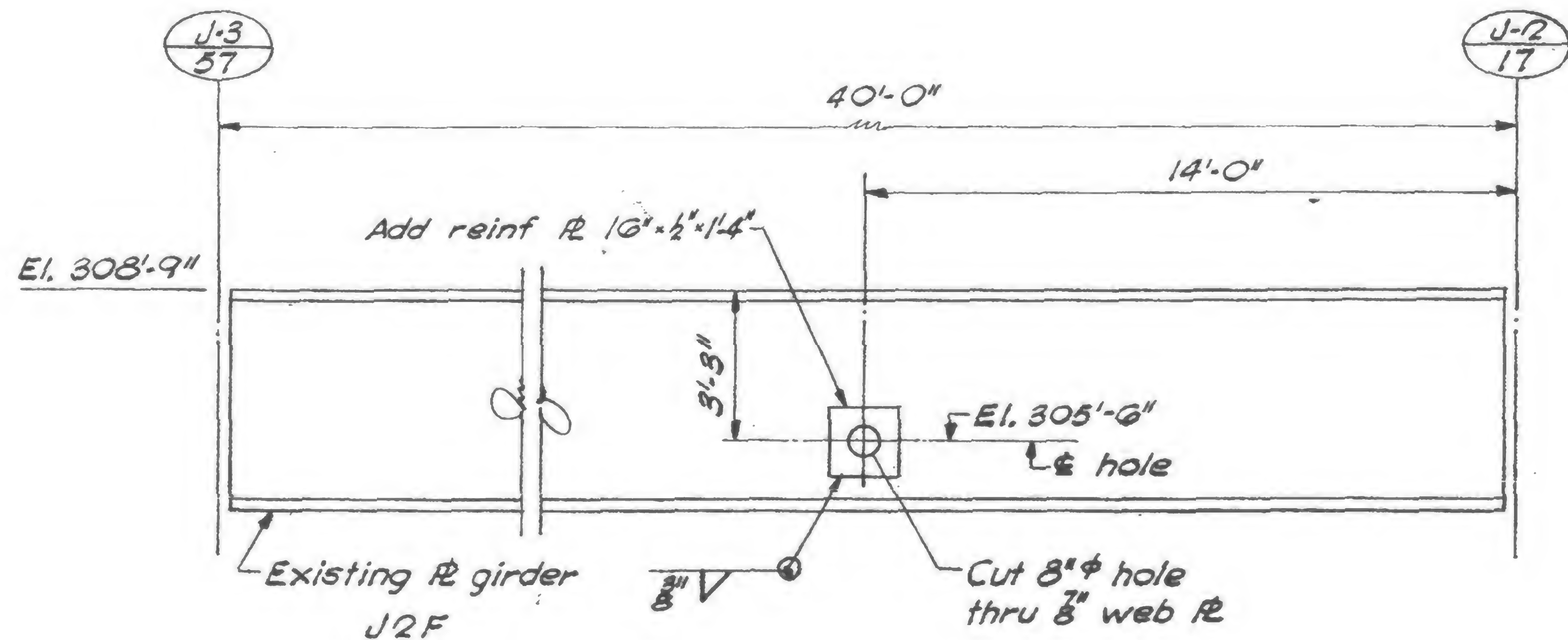
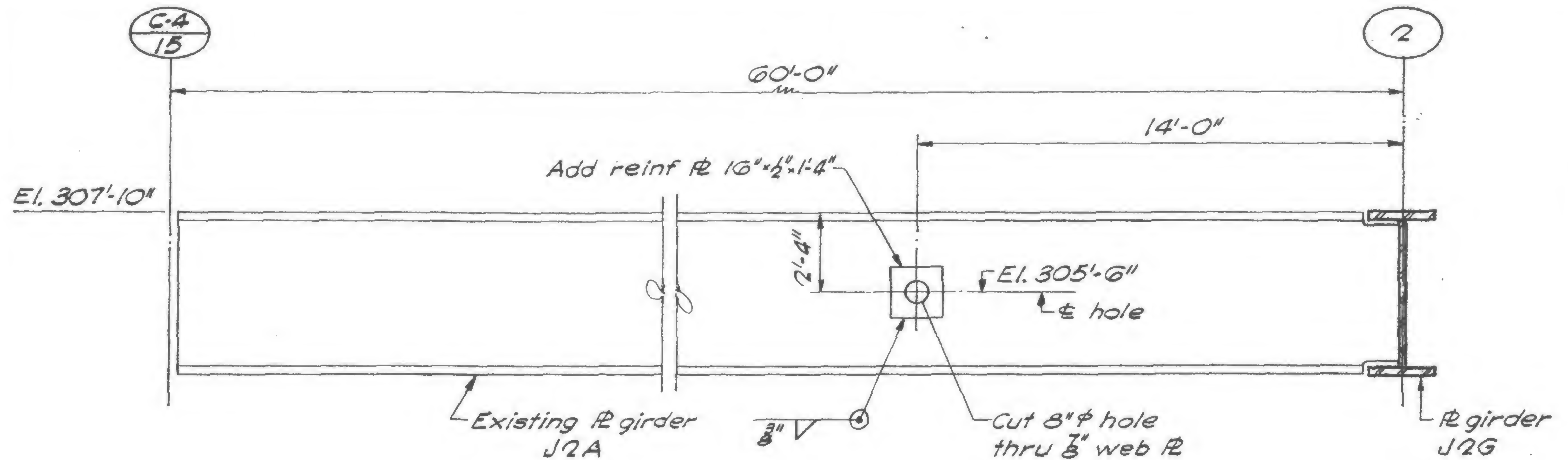
## Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE CUT OPENINGS IN B GIRDER J2A2J2F (CHANGE NO 233.065)  
(REF. JBB DWG. 5K-M-J-97 8-21-69)

DATE 11-24-69

## REVISIONS



DESIGNED

**DRAWN**

G. K.

REVIEWED

E.L.

19-J-1027

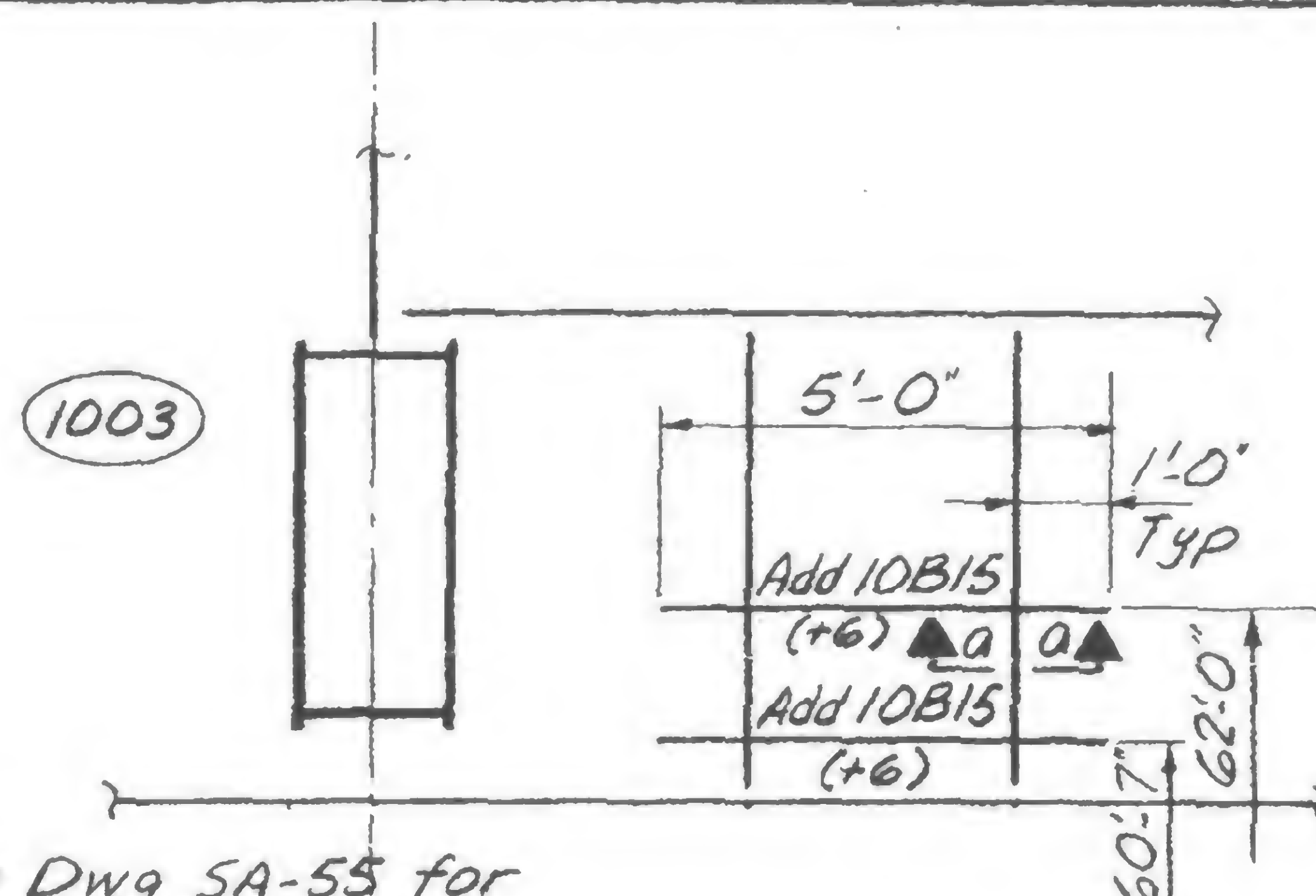


PROJECT THE WORLD TRADE CENTER

TITLE KITCHEN ELEVATOR FRAMING

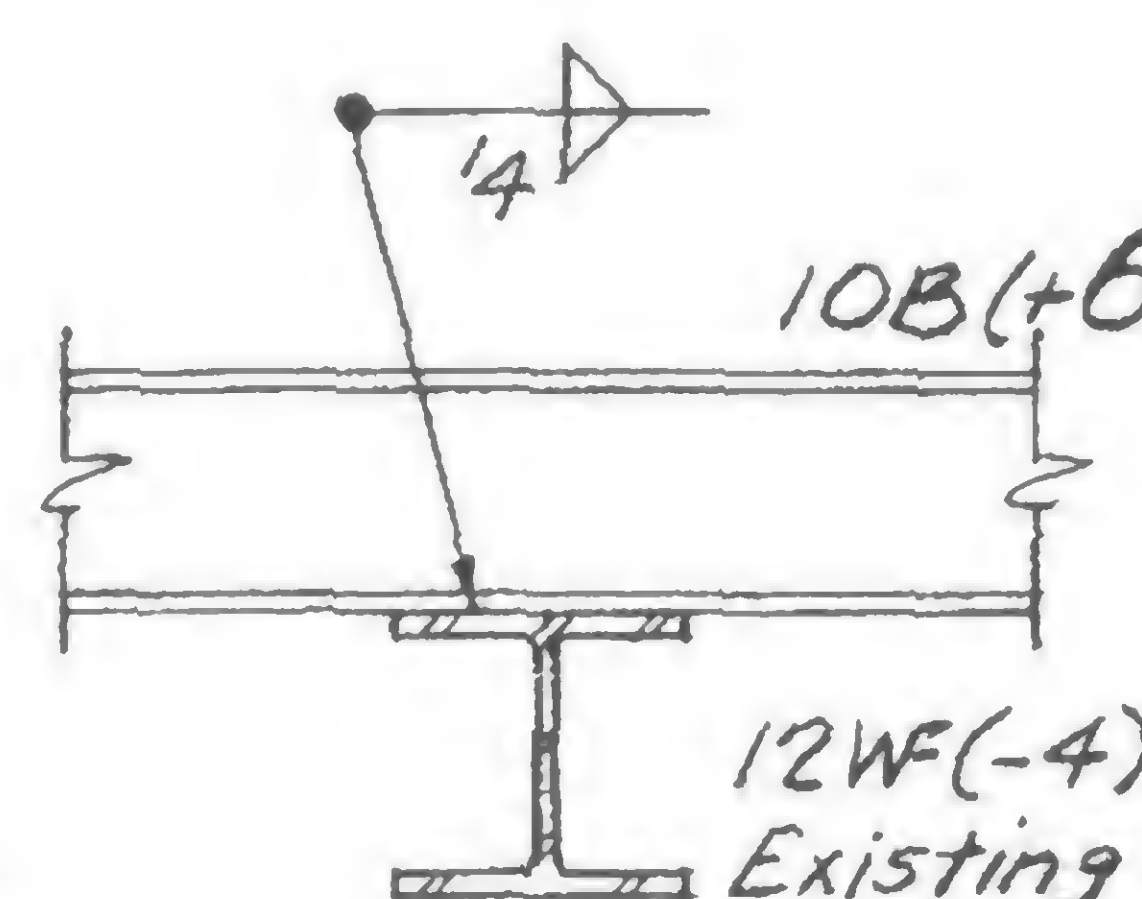
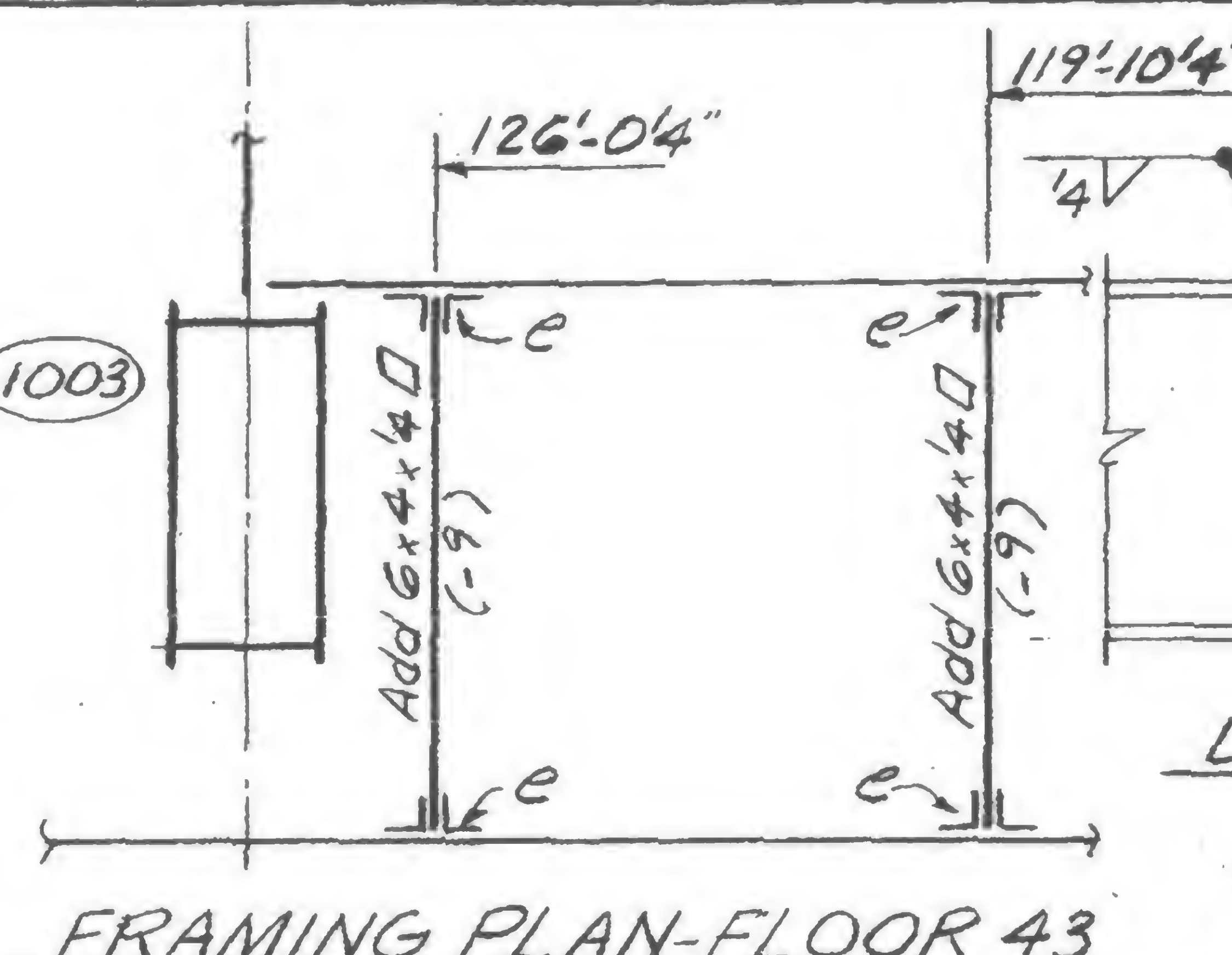
DATE 12-3-69

## REVISIONS



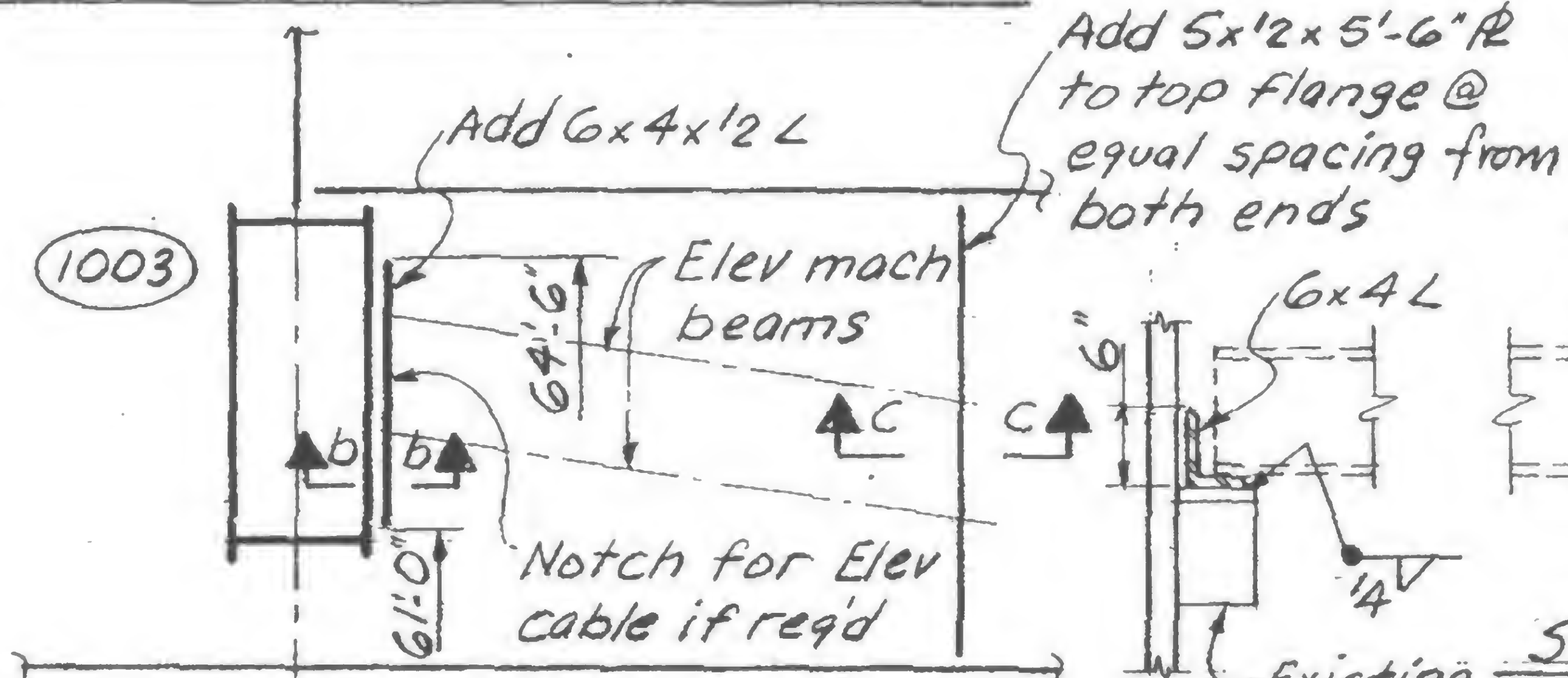
See Dwg SA-55 for existing members

FRAMING PLAN - FLOOR 47

Section A-A  
Typ. 4 Locations

Detail e

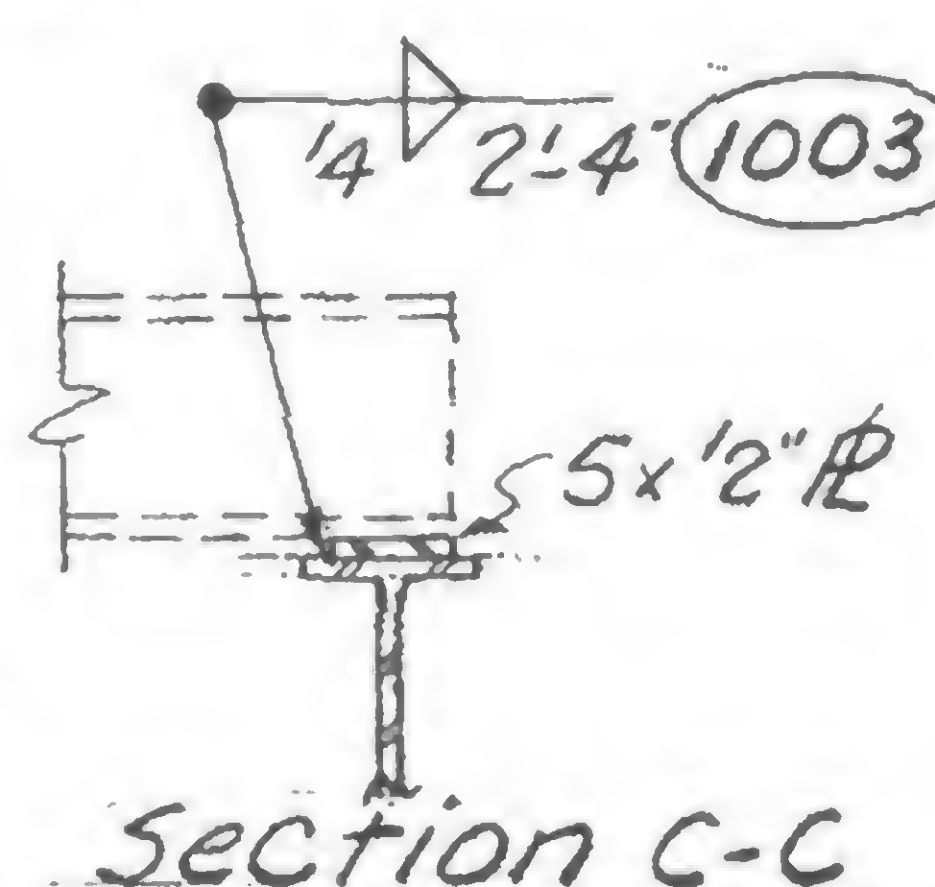
See Dwg SA-51 for existing members



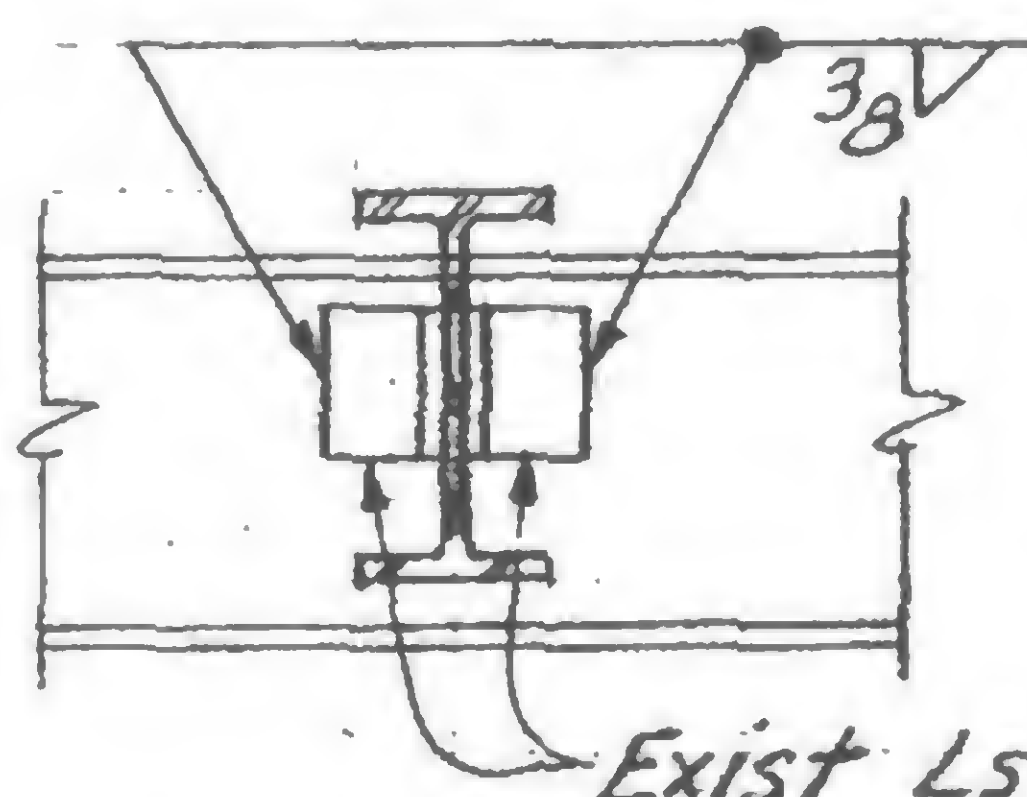
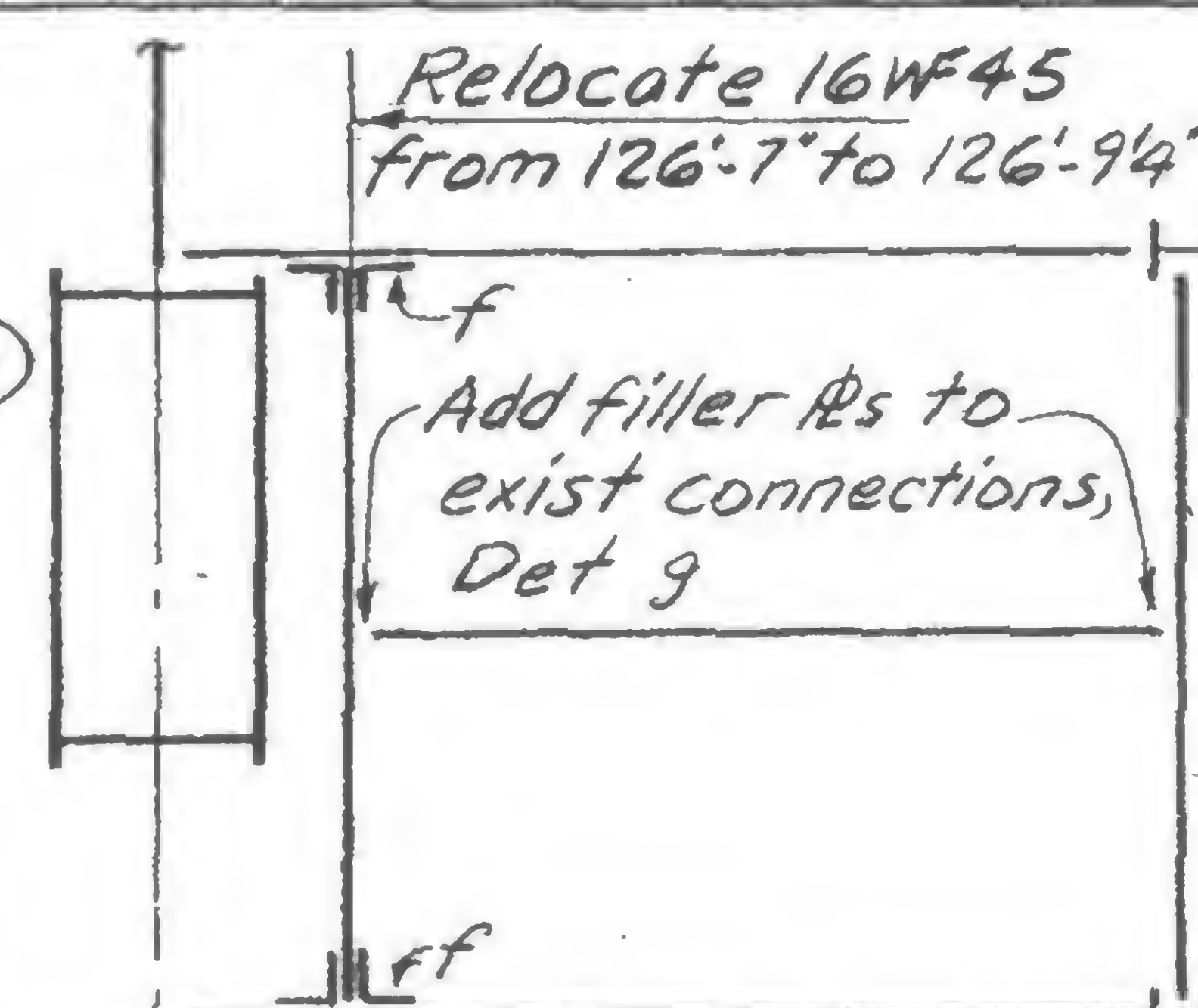
See Dwg SA-54 for existing members

FRAMING PLAN - FLOOR 46

Section b-b



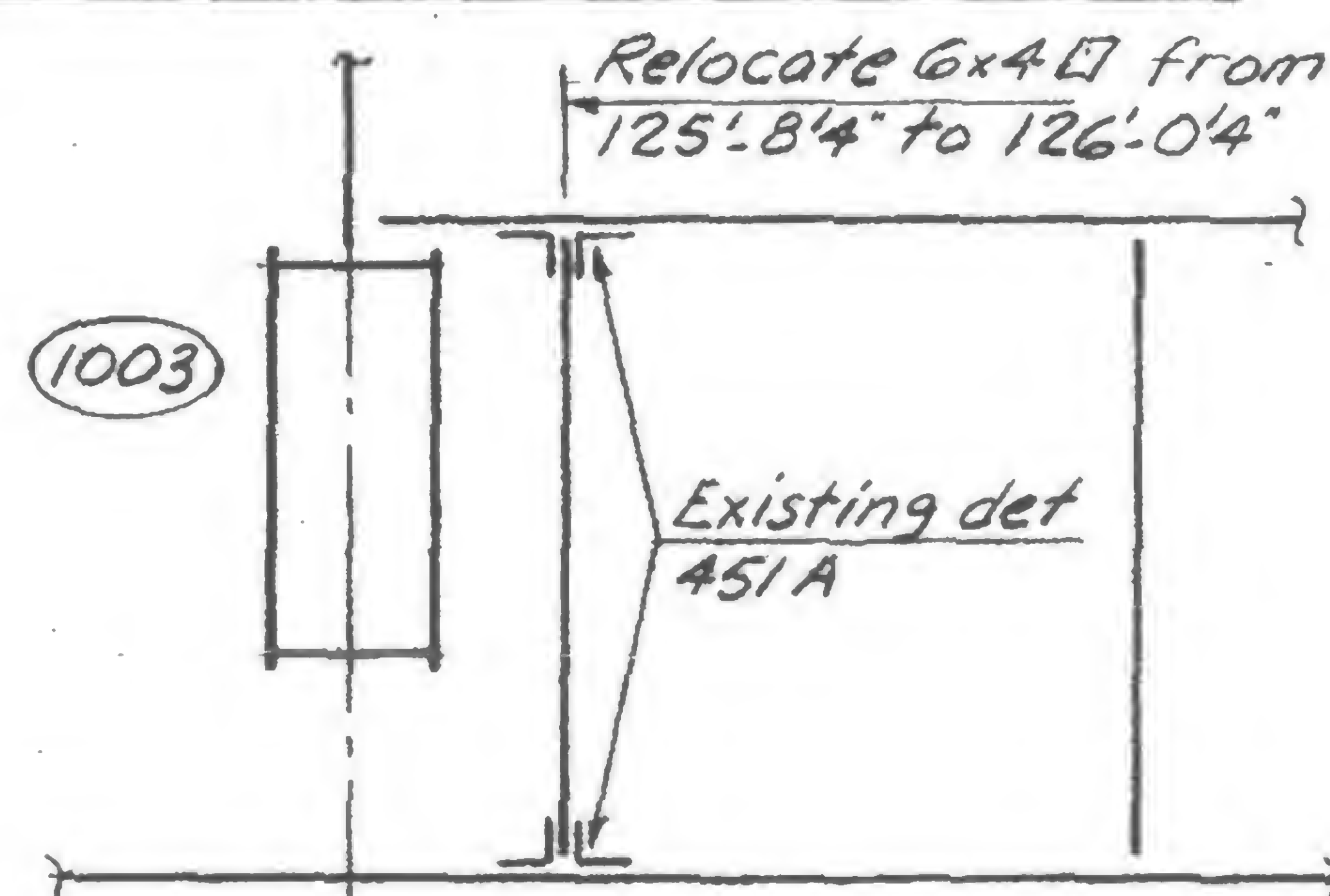
Section C-C



Detail f

See Dwg SA-51 for existing members

FRAMING PLAN - FLOOR 43 (-4'-0")



See Dwgs SA-52 &amp; SA-53 for existing members

FRAMING PLAN - FLOORS 44 &amp; 45

Per original detail

Each shim R full size to provide full bearing under original connections

Detail g

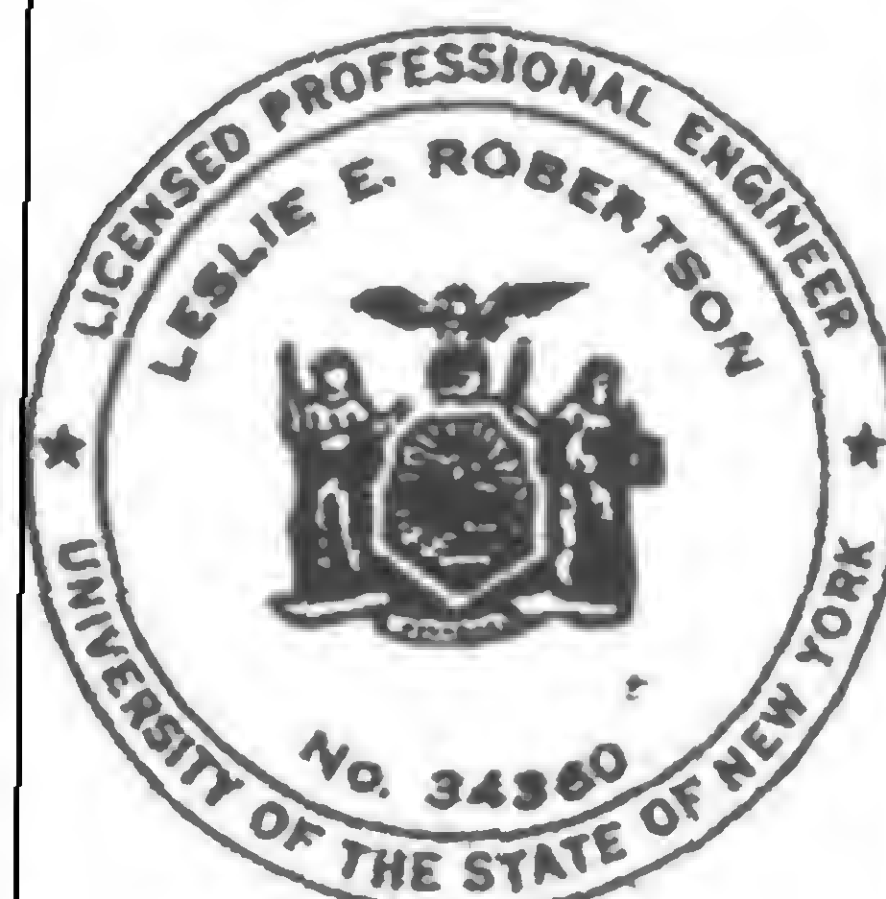
Per original detail

## Notes:

Members not identified are existing members shown in referenced drawings

VOID

19-A-1030



SIGNED

JLB

DRAWN

A. FRANCO

REVIEWED

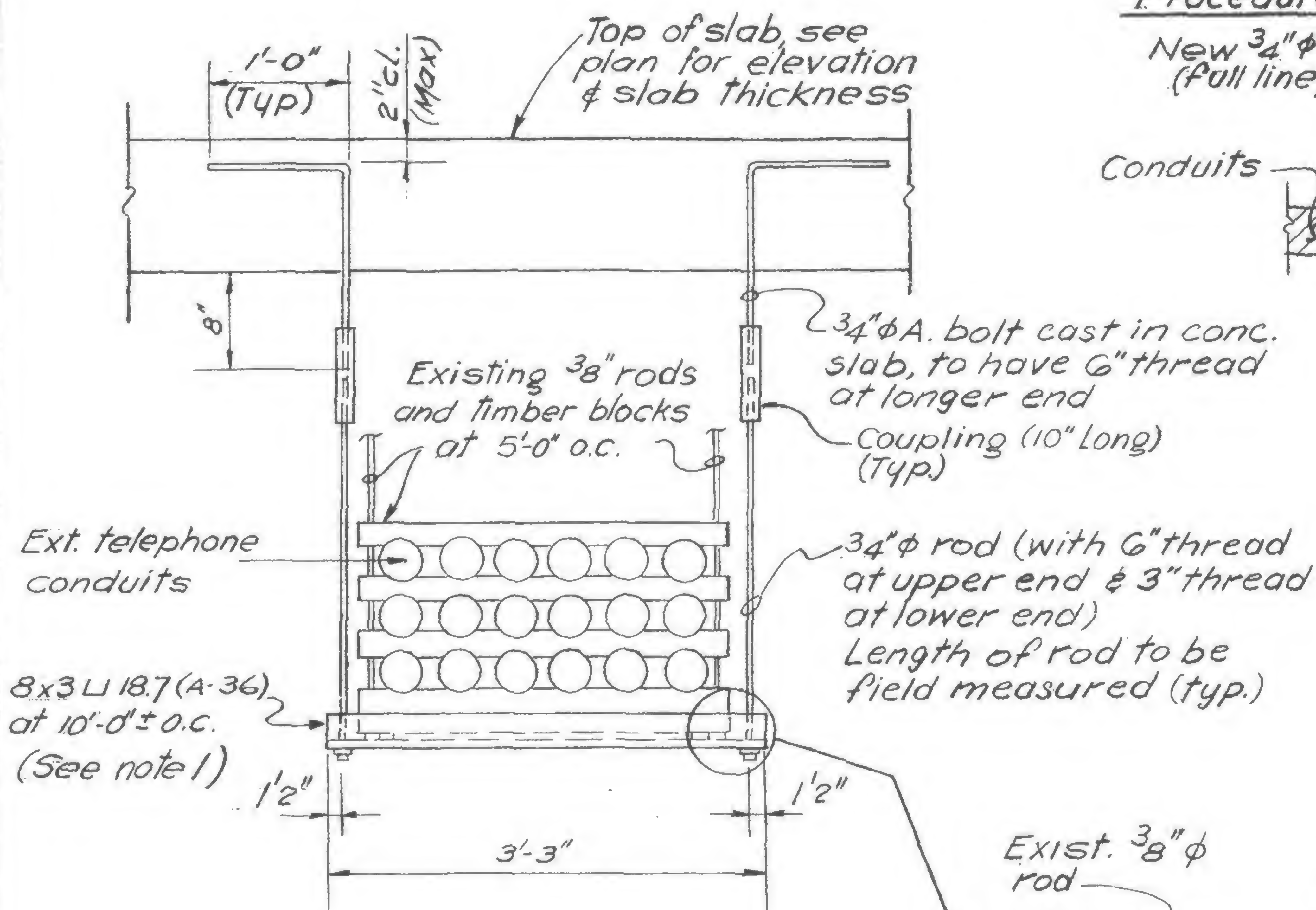


PROJECT THE WORLD TRADE CENTER

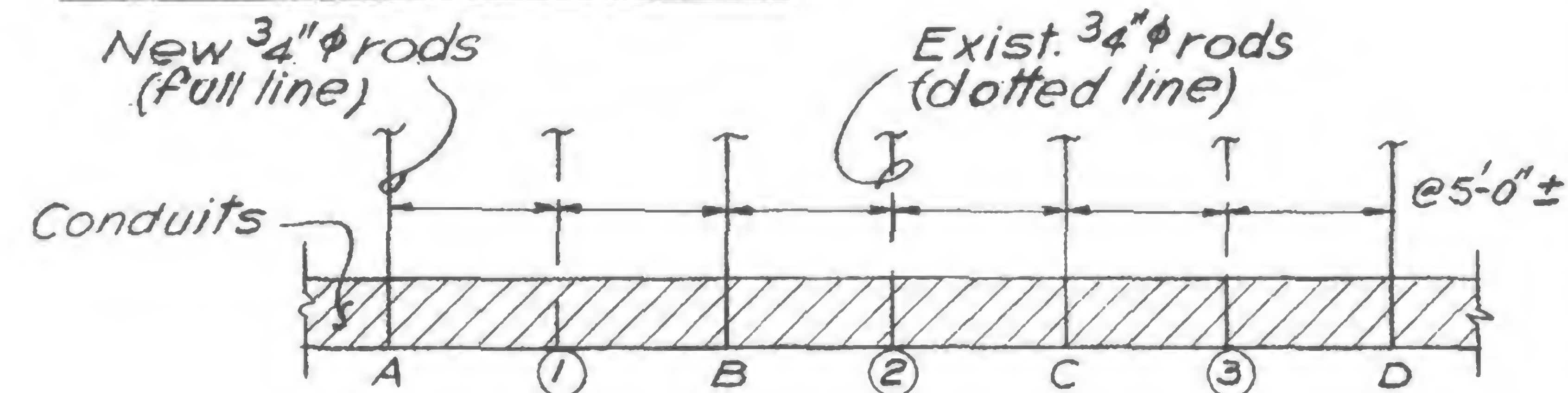
TITLE SUPPTS FOR EXIST. TELEPHONE CONDUITS - N. &amp; S. PROJ'S

DATE 3-3-70

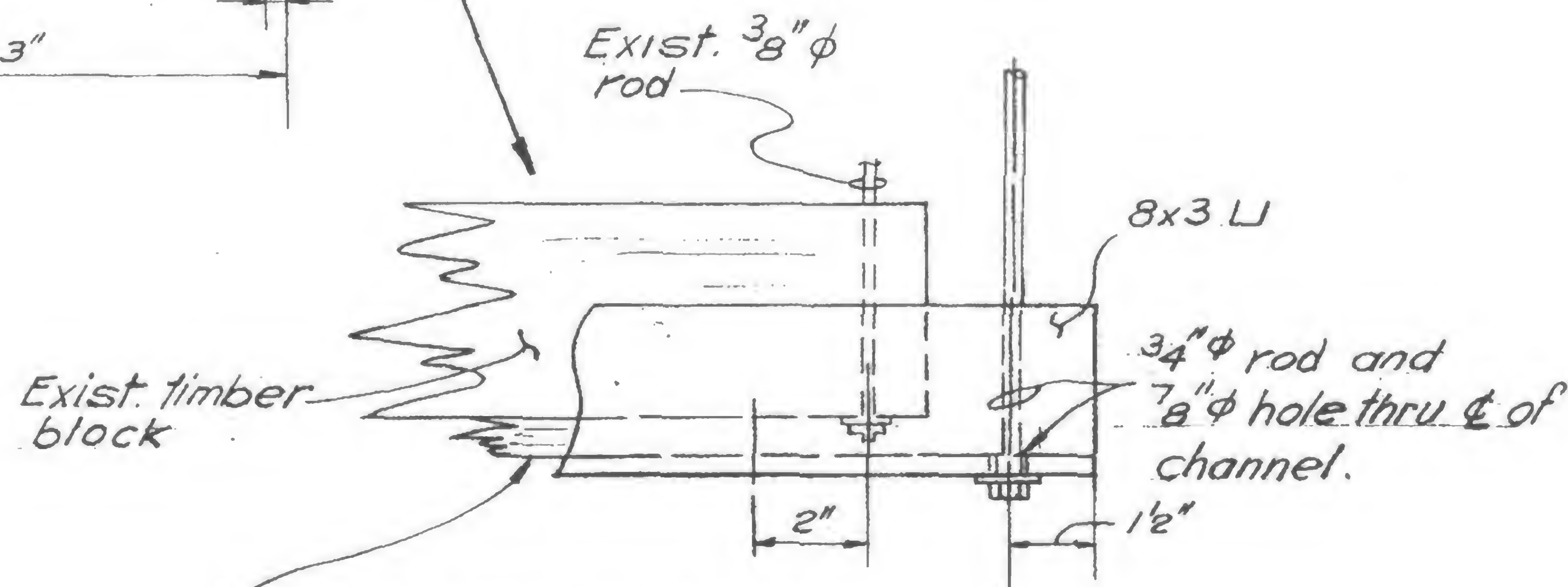
## REVISIONS

16-70 R GEN  
REV.

## Procedure of installation



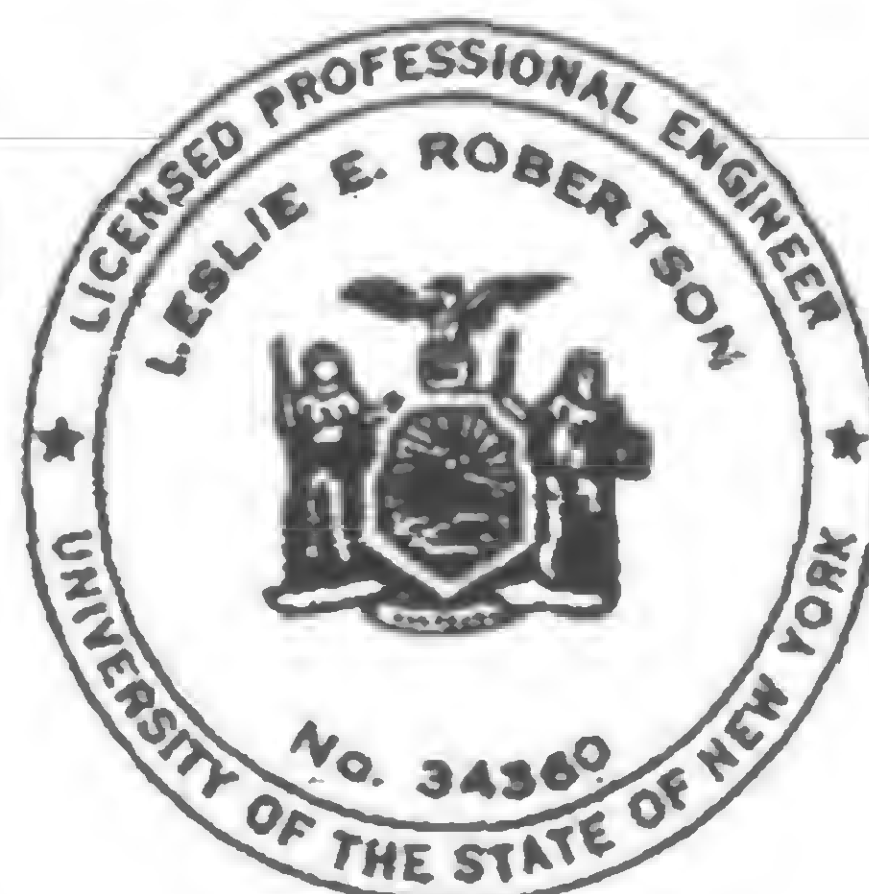
- 1- Provide two new L's for each Projection
- 2- Install new L's at point 'A' & 'B', one on each side of ①
- 3- Remove existing L from point ① and place it at 'C' with new rods.
- 4- Then, remove existing L from point ② and place it at 'D' with new rods.
- 5- Repeat procedure until completion.



Add 3" wide creosoted oak plank. Thickness as req'd. to miss the nuts under existing. 3/8" rods (nail plank to block)

VOID  
(PER E. L. V.)

19-K-1031



DESIGNED

DRAWN

V.H.A

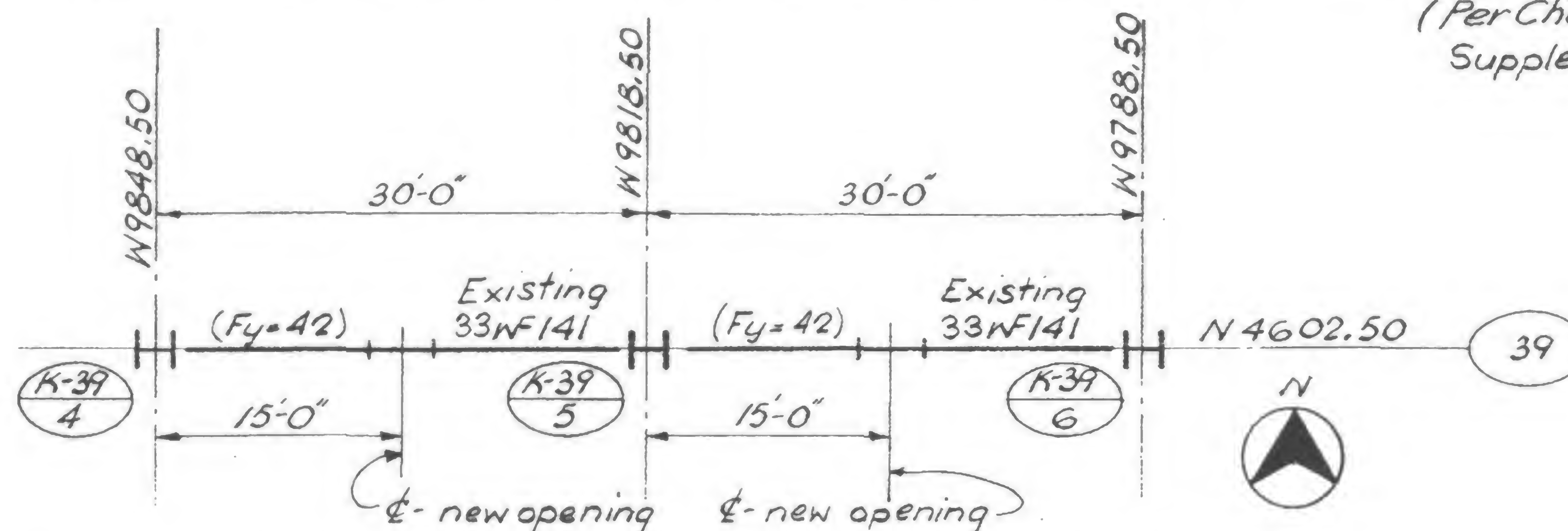
REVIEWED

E.L.

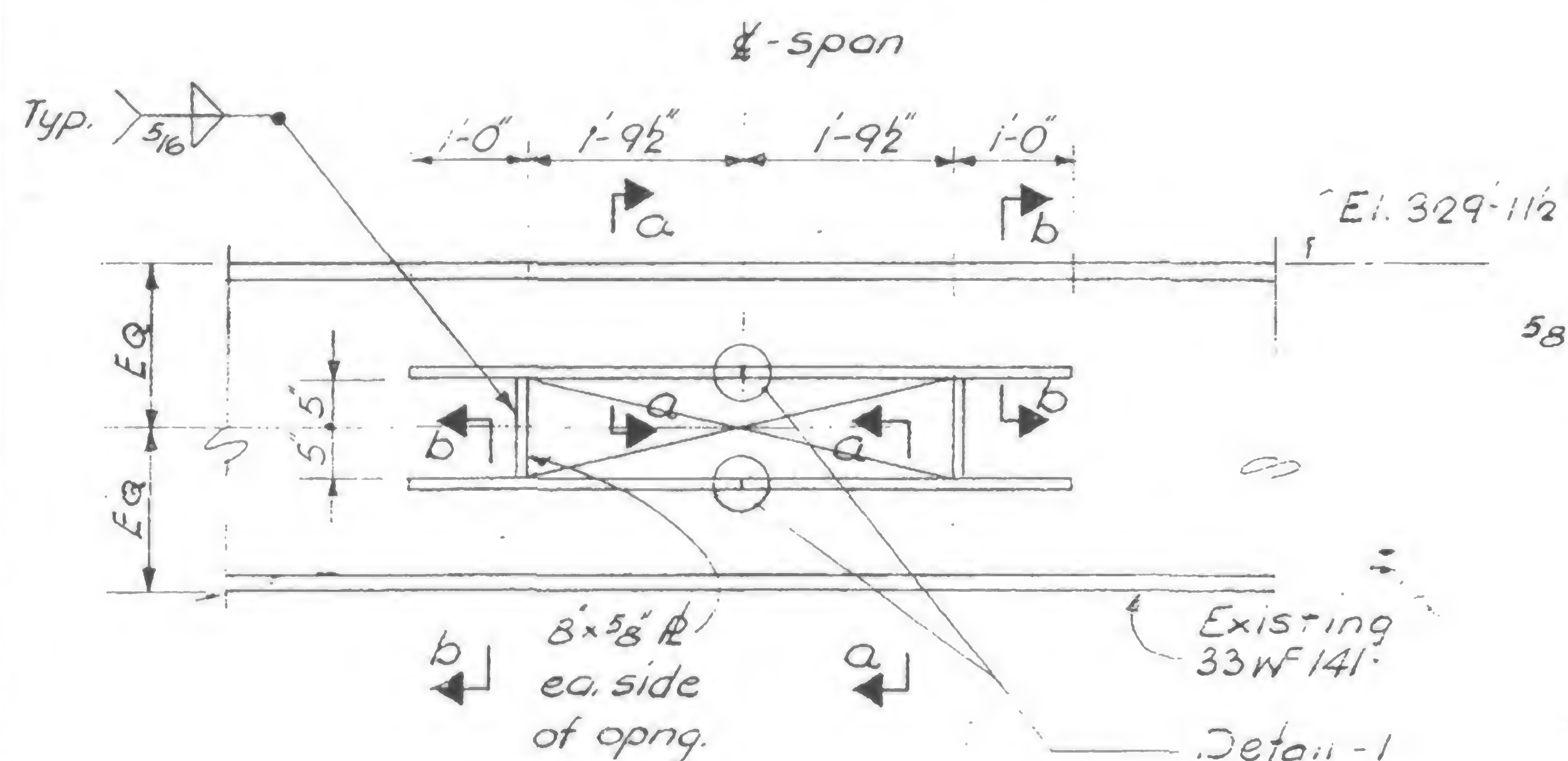


PROJECT THE WORLD TRADE CENTERTITLE OPNG. THRU BEAMS BTW. COLS. K39-4 (K39-6) (El. 332')DATE 6-23-70

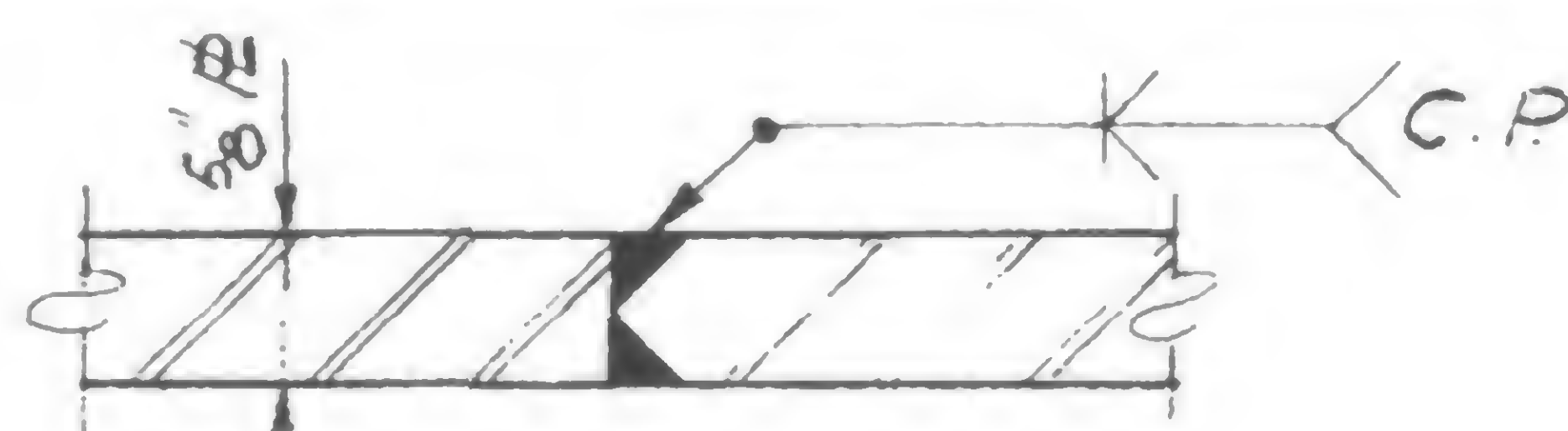
## REVISIONS

(Per Change No. 405.037)  
Supplement No. 1

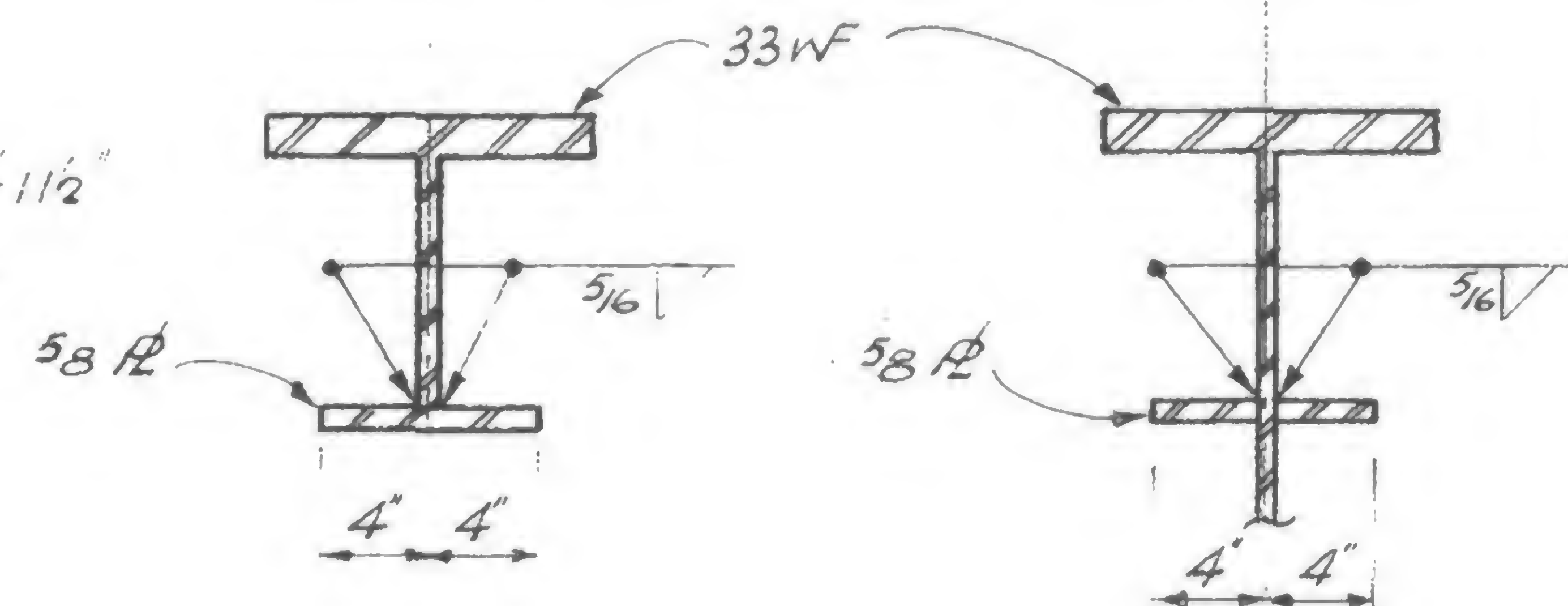
Port Plan at El. 332' (Zone K-2)  
(North of Tower 'B')



Elevation of Beam



Detail - 1

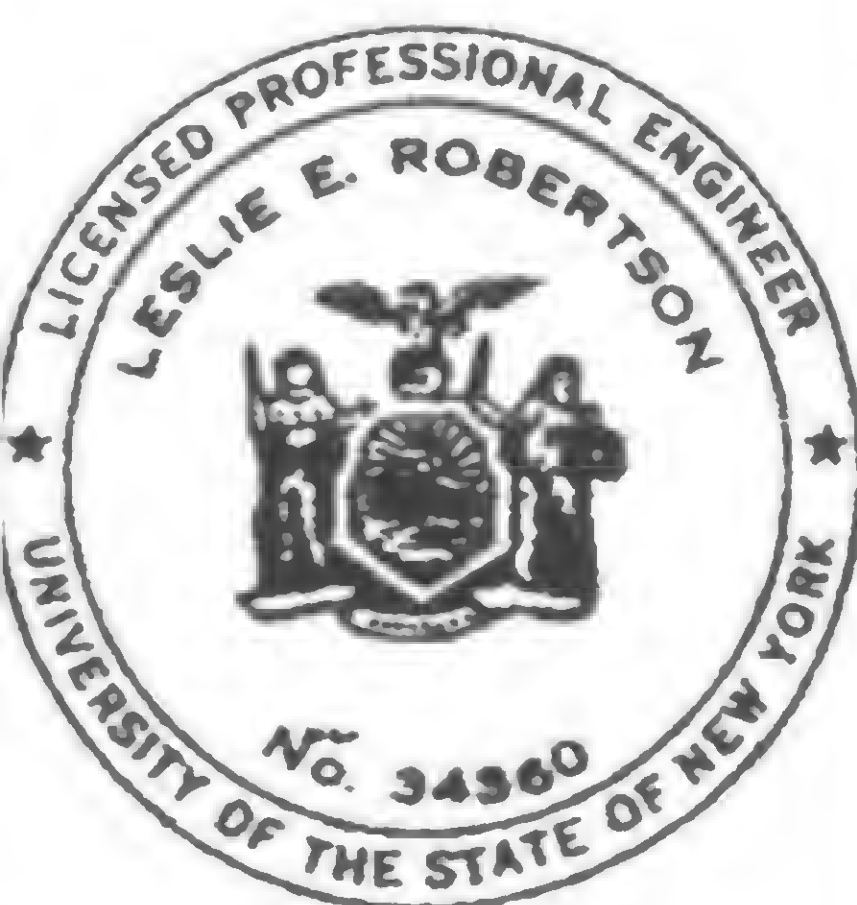


Section a-a

Section b-b

## Notes:-

1. All #s to be A-36 steel
2. All electrodes to be E 70xx



DESIGNED

DRAWN  
D. Huggins

REVIEWED

E.L.

19-K-1035



PROJECT

THE WORLD TRADE CENTER

TITLE

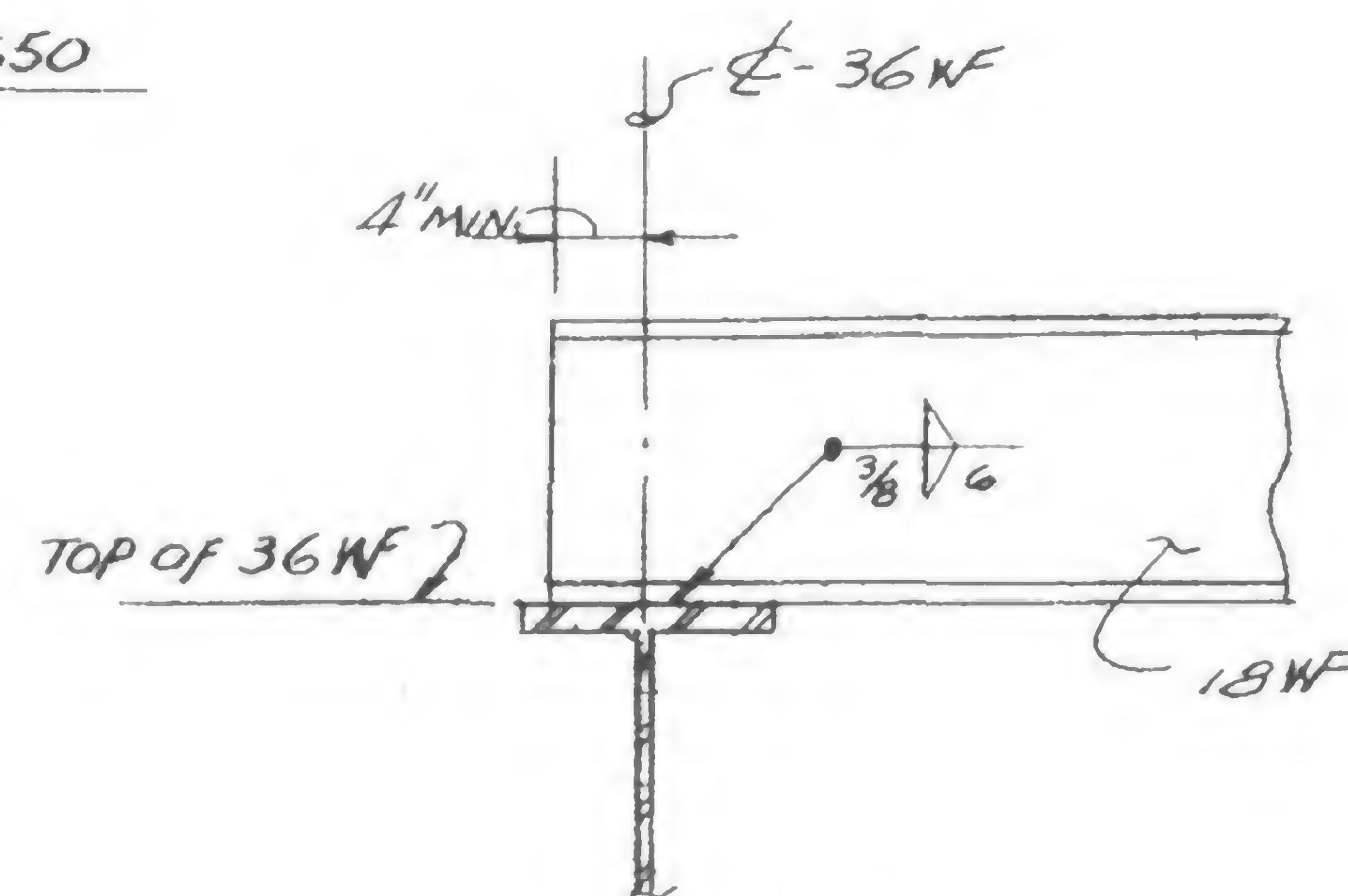
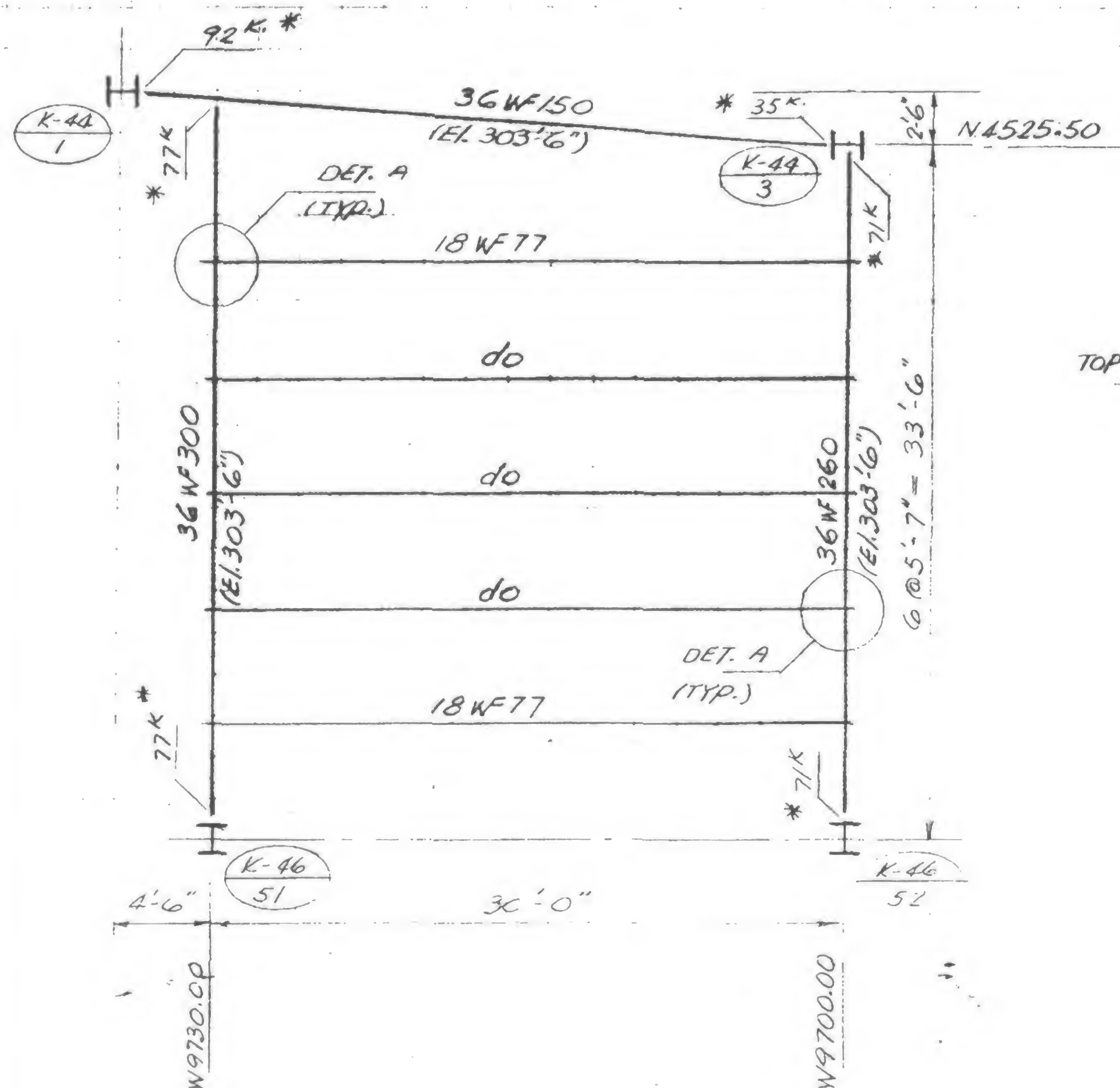
TEMPORARY SUPPORT SYSTEM TO SUPPORT CONC POUR @ EL. 294

DATE

8-25-70

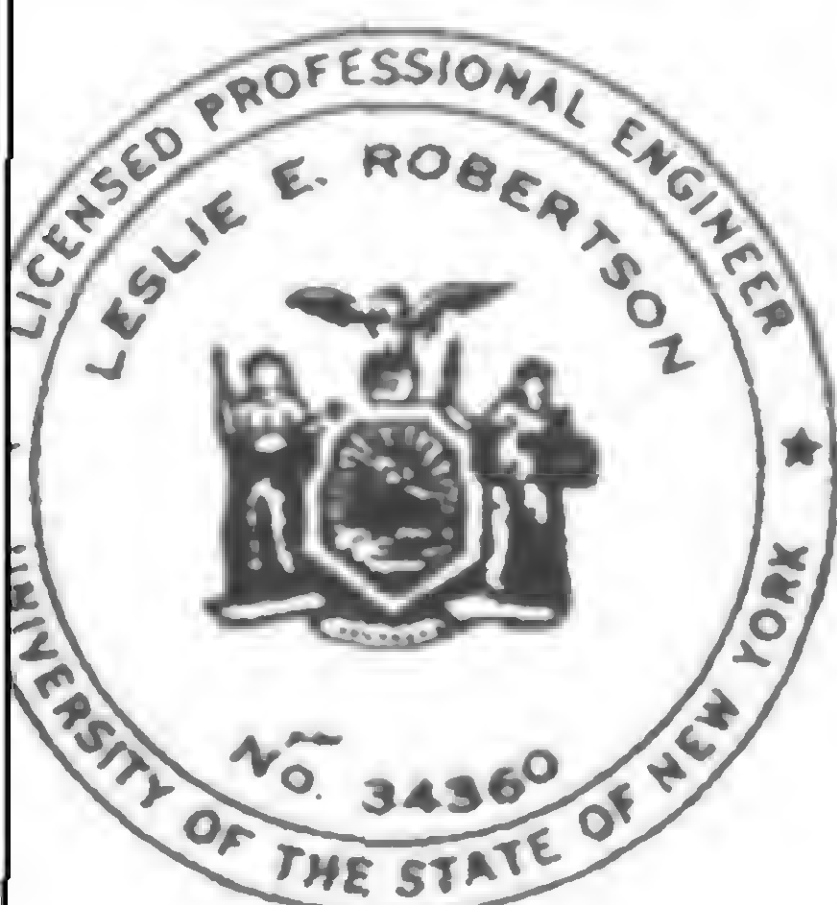
REVISIONS

(Per letter TRCC to SHCR on 8-12-70)



## Notes:

1. All steel members shown to be A-36.
2. All electrodes to be E70xx.
3. \*—field connection in accordance with AISC manual of steel construction, table VI.
4. Field measure all dimensions between existing columns (K44-1, K44-3, K46-51 & K46-52).
5. Steel framing as shown and all the attached formwork shall not be removed until after completion of all concrete work at El. 294 between Tower 'B' and east slurry wall after the removal of existing PATH tube.



SIGNED

DRAWN

S.C.

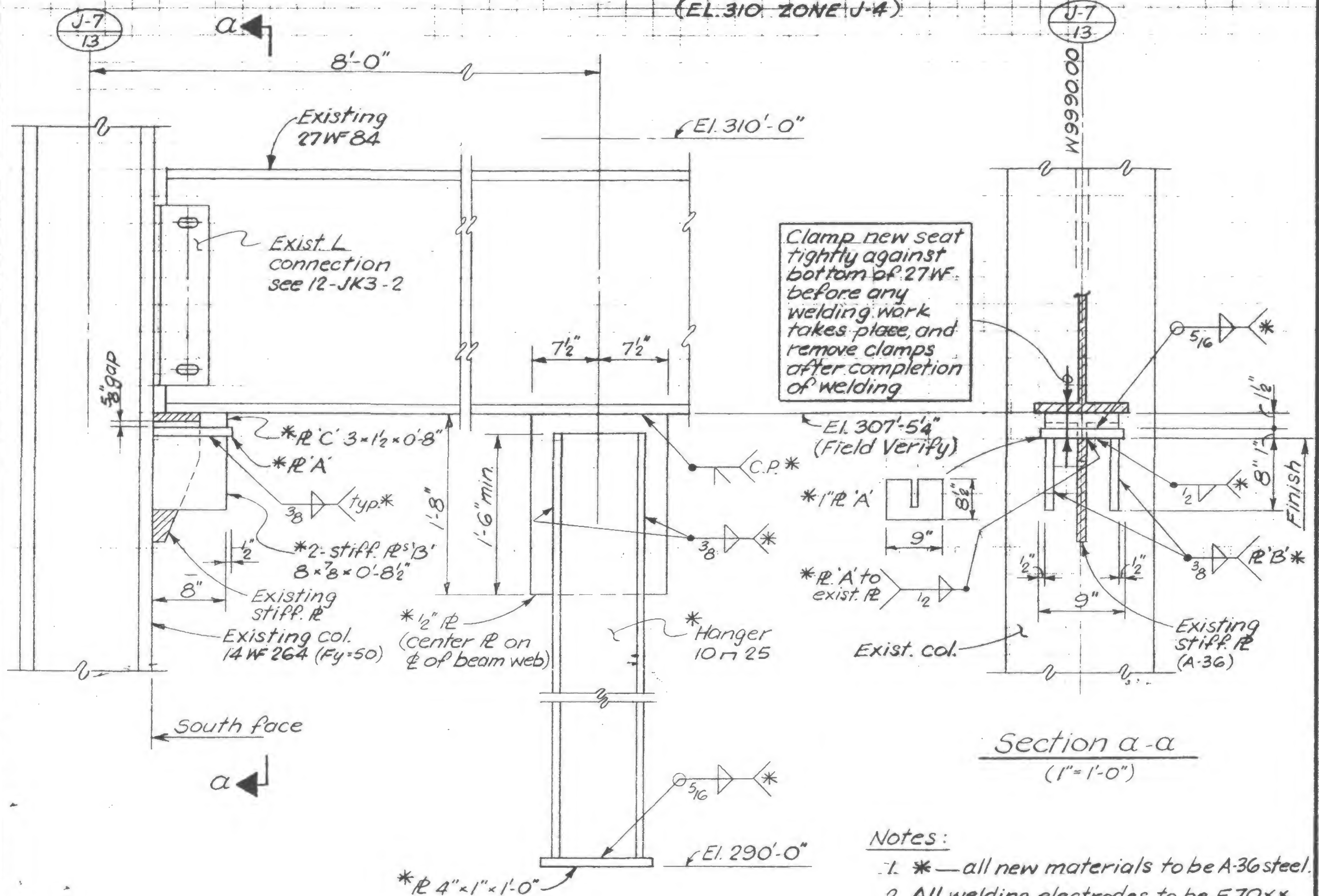
REVIEWED

E.L.

19-K-1036



## REVISIONS



## ELEVATION

(Looking east)  
(1" = 1'-0")

Section a-a

$$(1'' = 1'-0'')$$

Notes:

1. \* — all new materials to be A-36 steel.
2. All welding electrodes to be E70xx low hydrogen.
3. Hanger & 1/2" R to be removed at the direction of the Engineer.
4. Entire seat connection to be removed as described on 12-JK3-2

19-J-1037





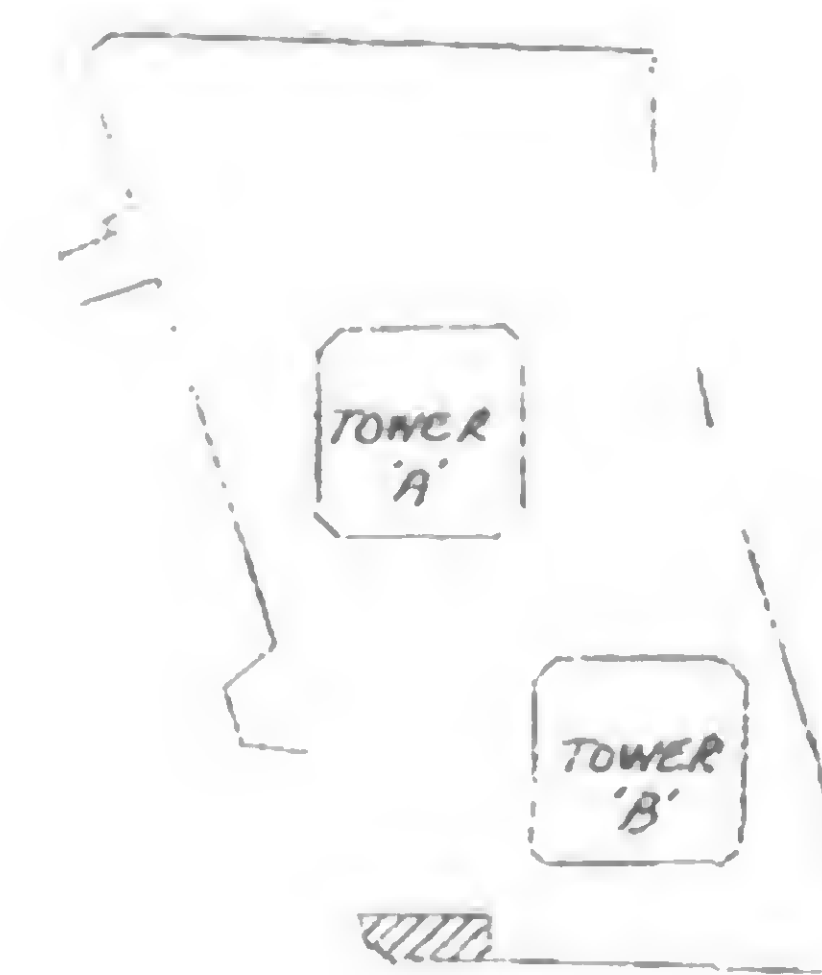
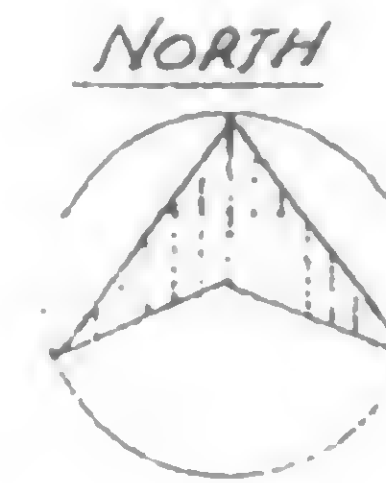
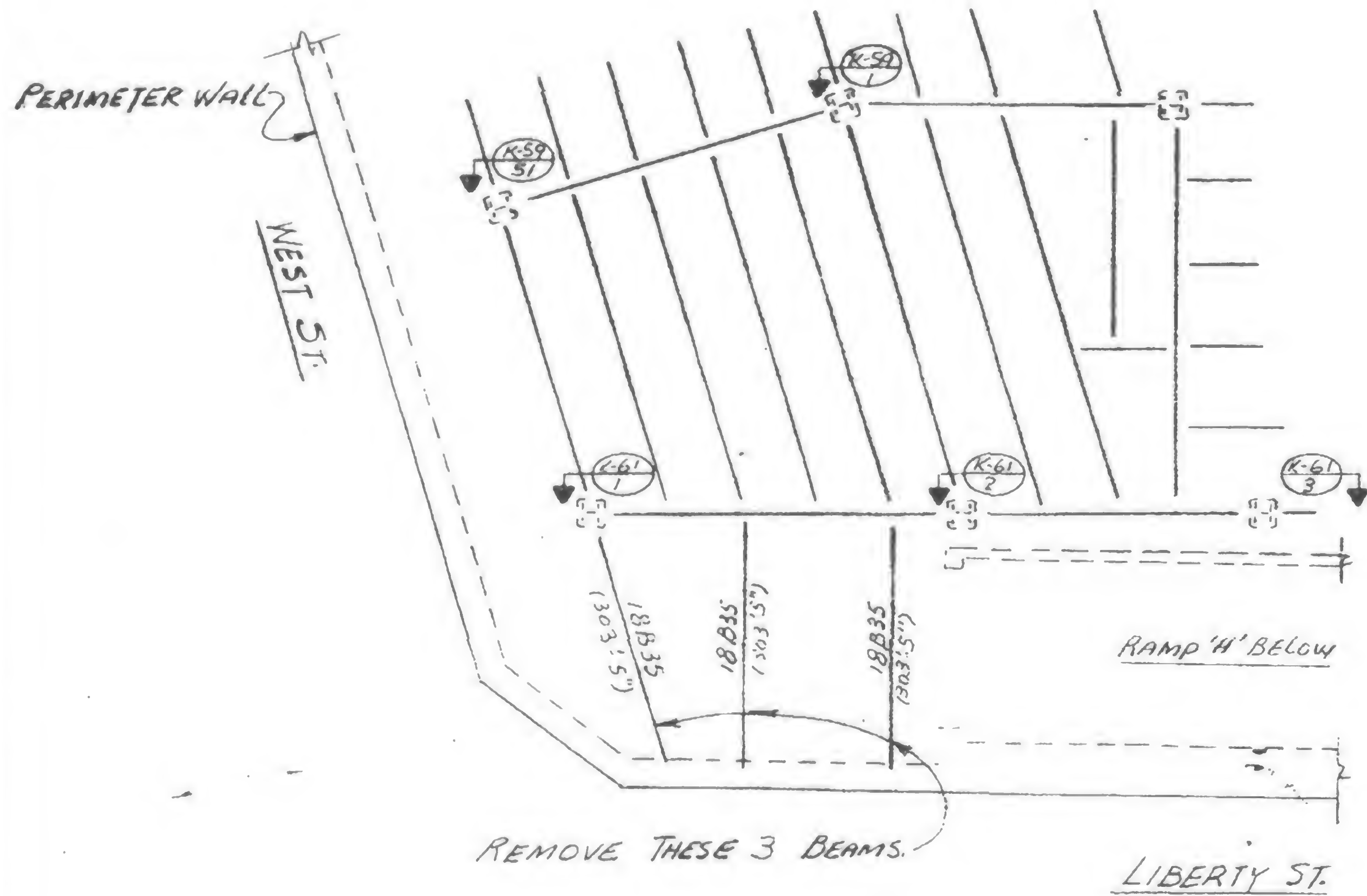
PROJECT THE WORLD TRADE CENTER

TITLE REMOVE BEAMS OVER RAMP 'H' EL310' (ZONE K-5)

DATE 12-4-70

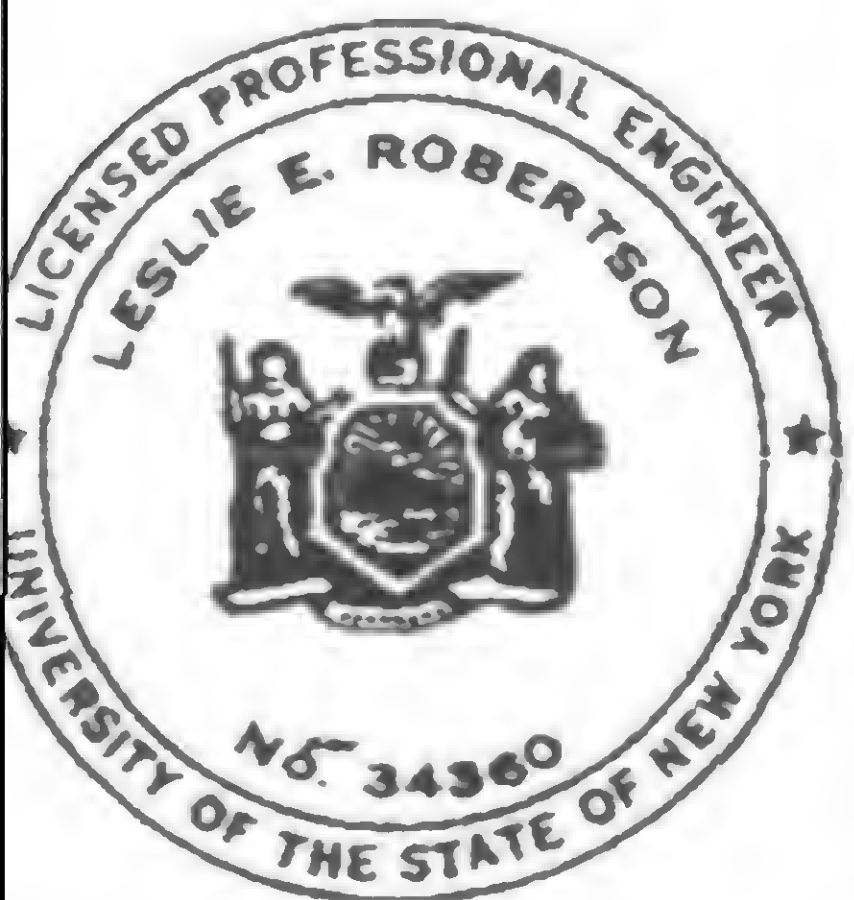
REVISIONS

(CHANGE NO. 433-092)



KEY PLAN

PART PLAN AT EL.310'-0"



DESIGNED

TL

WN

ETL

REVIEWED

ETL

19-K-1038



PROJECT

THE WORLD TRADE CENTER

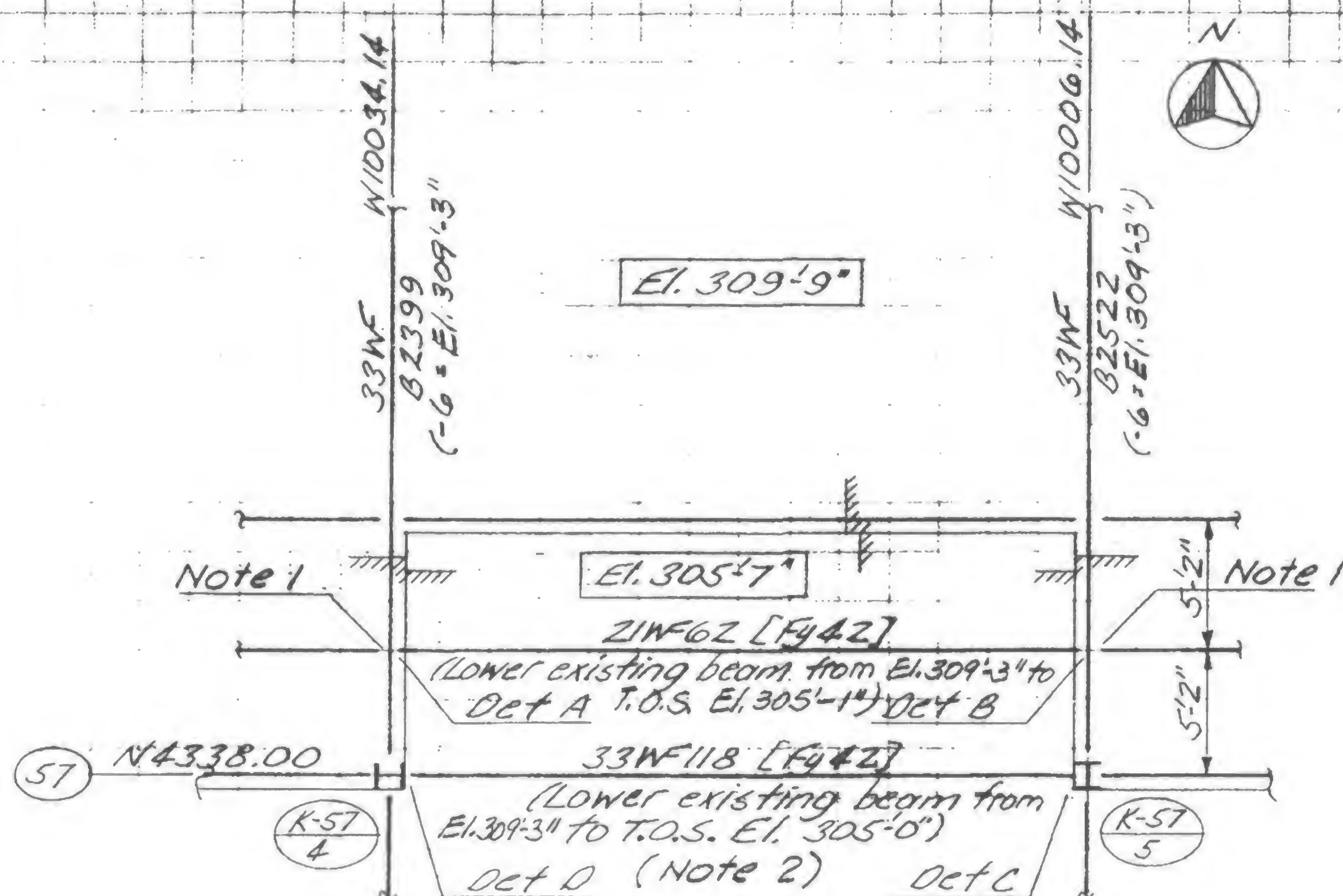
TITLE

STEEL BEAM REPAIR AT EL. 310 - ZONE K-5

DATE

1-15-71

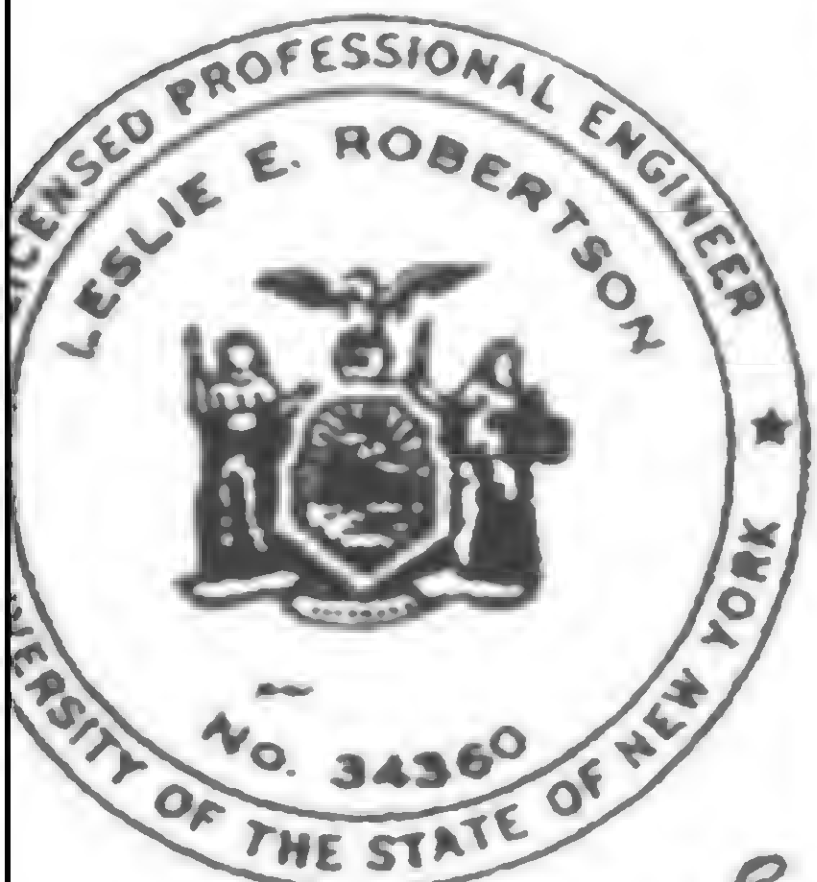
REVISIONS



Part Plan at El. 310 - Zone K-5

### Notes

1. Before unbolting provide adequate temporary support to these beams and reconnect after beam between has been lowered.
2. Remove exist. connection fittings after beam has been lowered.



19-K-1039.1



PROJECT

THE WORLD TRADE CENTER

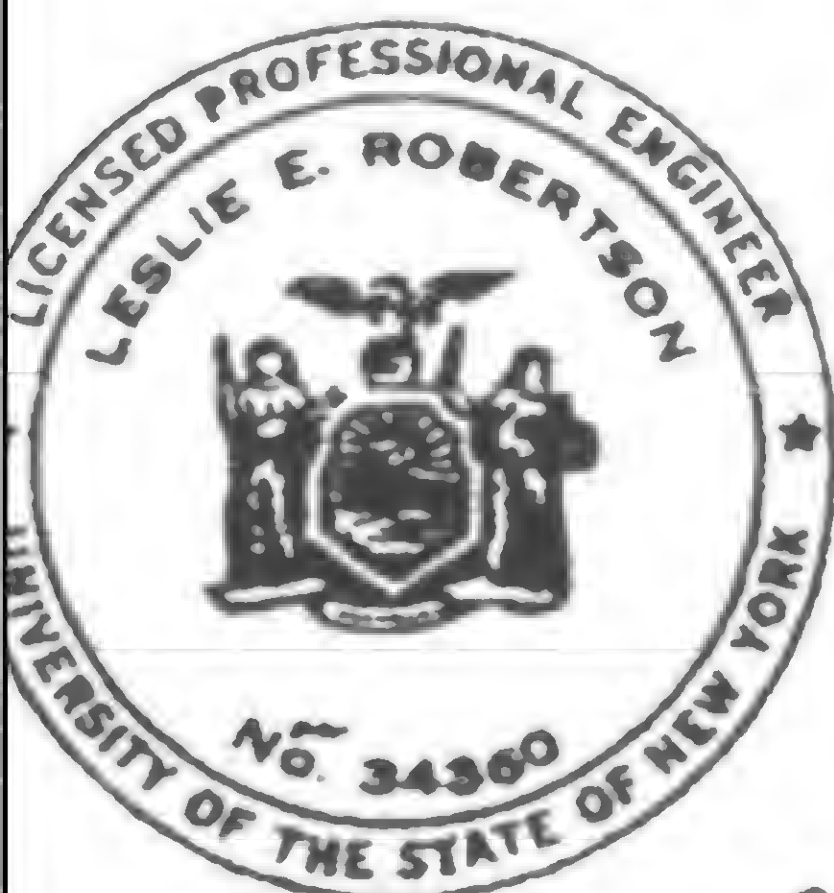
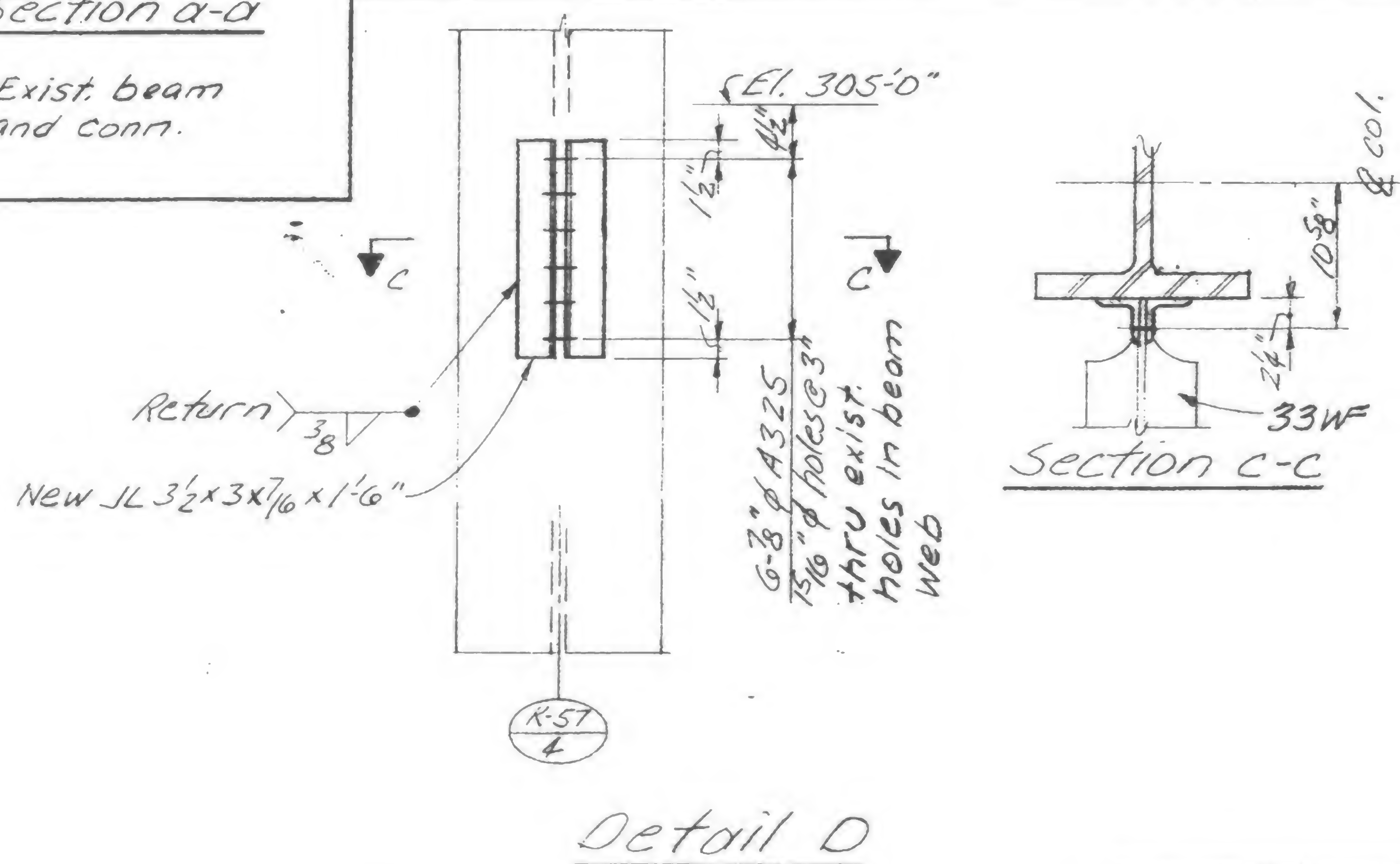
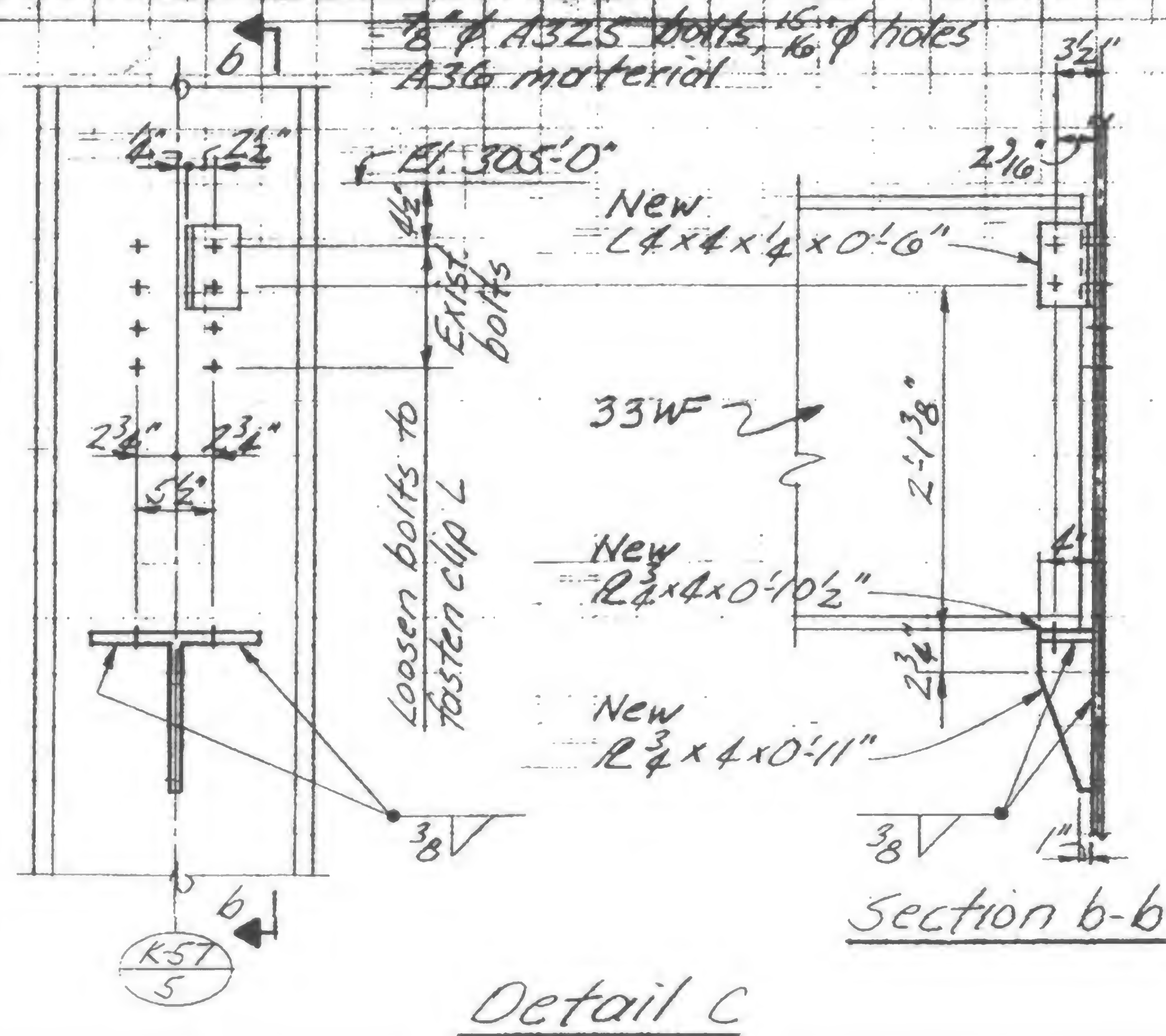
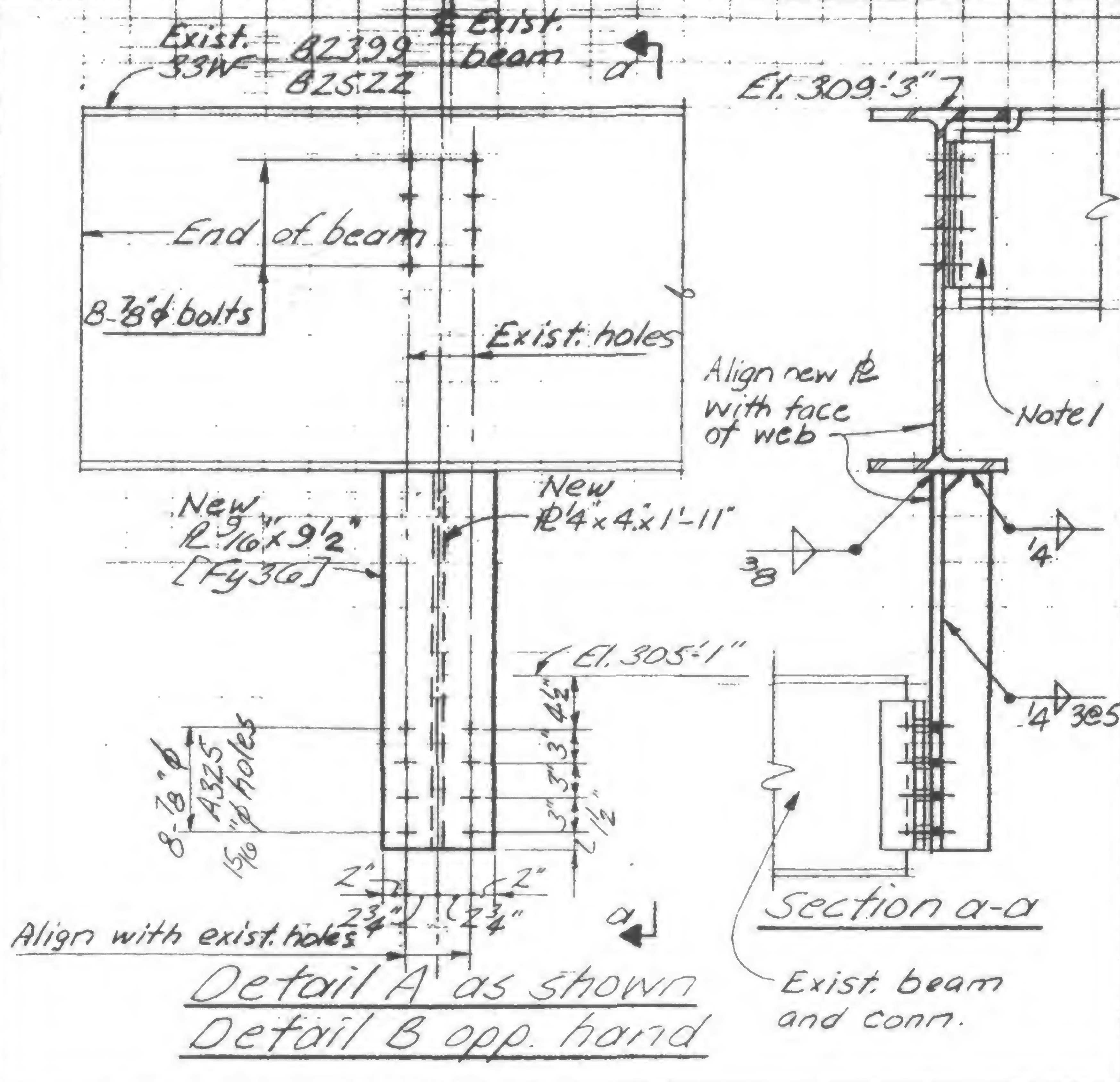
TITLE

STEEL BEAM REPAIR AT EL 310 - ZONE K-5

DATE

1-15-71

REVISIONS



DESIGNED

DRAWN

REVIEWED

19-K-1039.2



PROJECT THE WORLD TRADE CENTERTITLE REMOVING OF TEMPORARY GIRDERS AT EXPANSION JOINTS.DATE 1-14-71

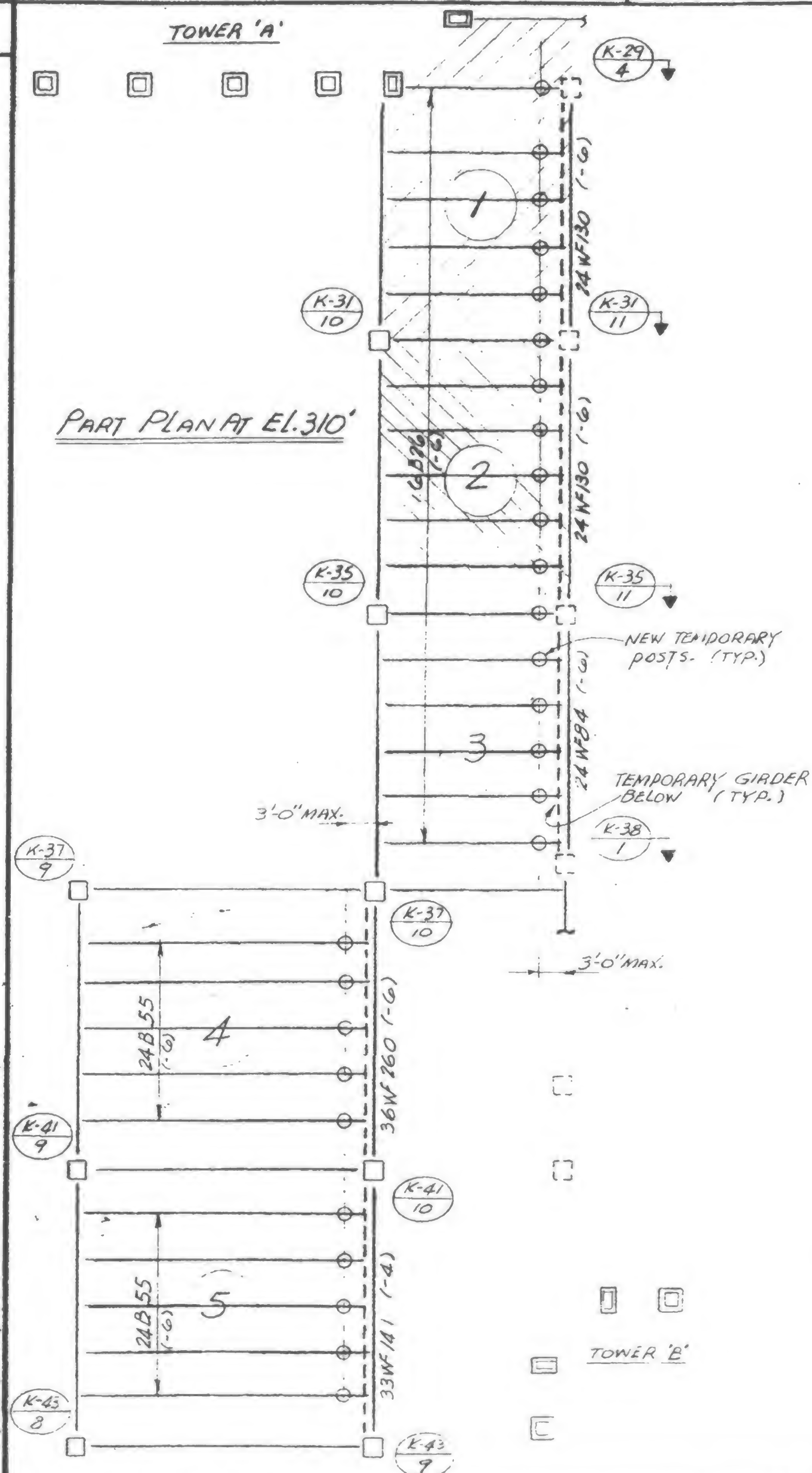
## REVISIONS

TOWER 'A'

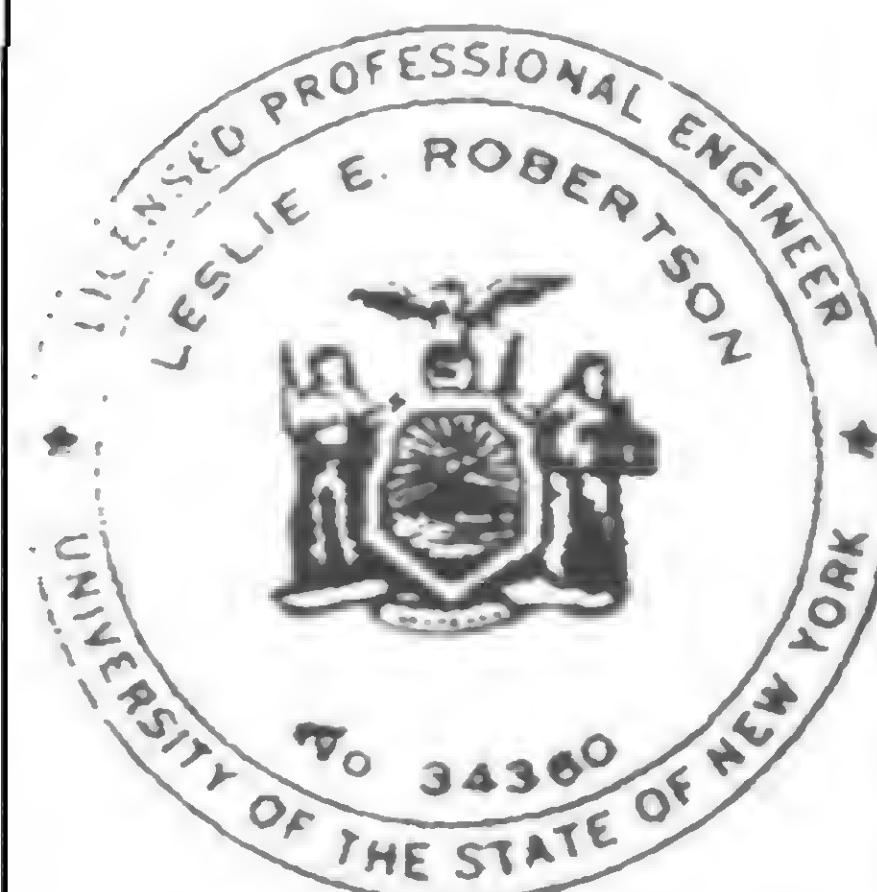
## WORK PROCEDURE

(See also details on 12-JK3-7, 8, 10 and 8-JK5-14.3)

1. Remove "Work Platform" over any one or more of the designated areas (1 thru 5) where temporary girders are planned to be removed. Restrict the same area or areas from any possible traffic movements besides an occasional Live Load of not more than 20 psf. This restriction shall not be lifted until after closing of the expansion joints as described on 8-JK5-14.3 and 12-JK3-7.
2. Shore all beams presently supported by the temporary girder or girders to be removed.
3. Remove temporary girder or girders as shown on 12-JK3-7.  
Follow Detail "B" if an adjacent girder is not planned to be removed. (This applies only to girders along side of 24WF between column K29-4 and K38-1).
4. If required, post under any one of the beams may be removed, provided, an angle seat connection as shown on Detail "a" is furnished.

PART PLAN AT EL. 310'

TOWER 'B'



SIGNED

L.

DRAWN

E.L.

REVIEWED

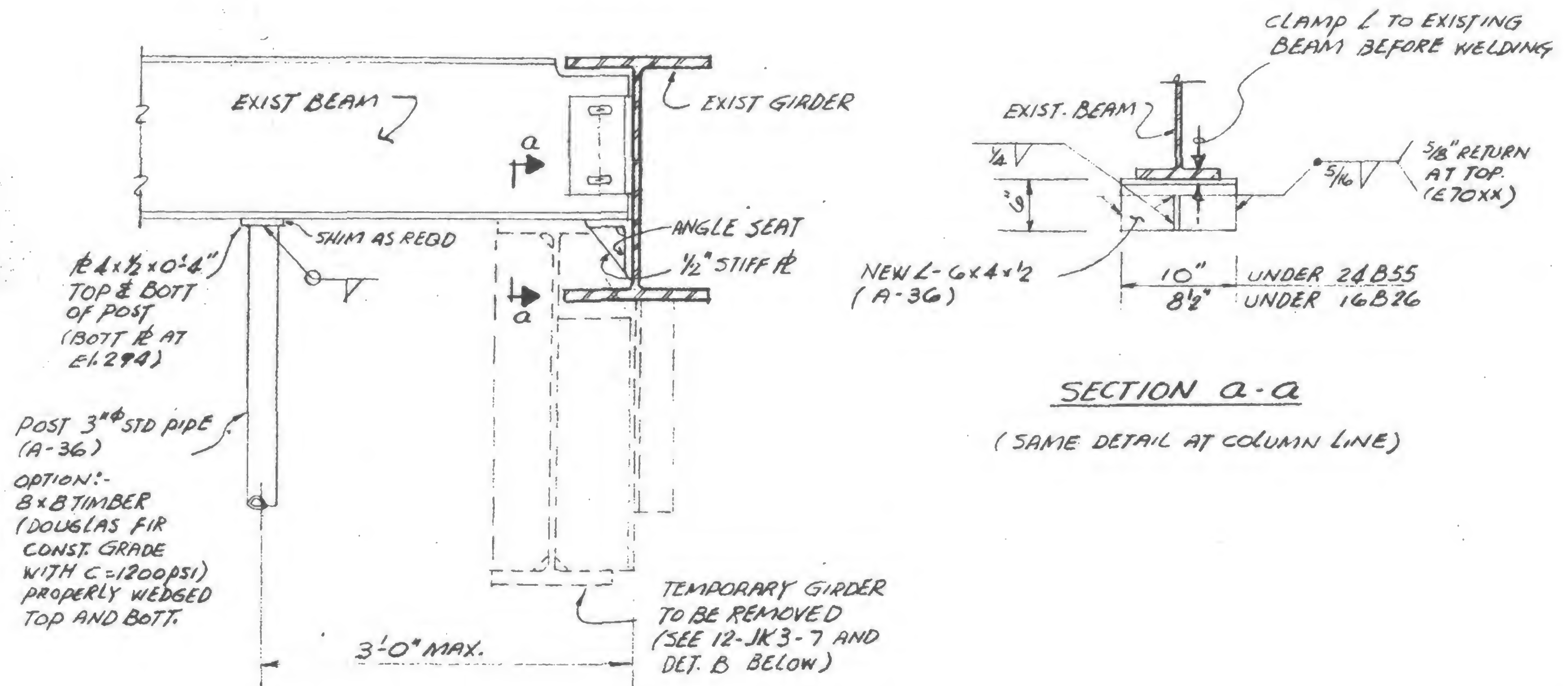


PROJECT THE WORLD TRADE CENTER

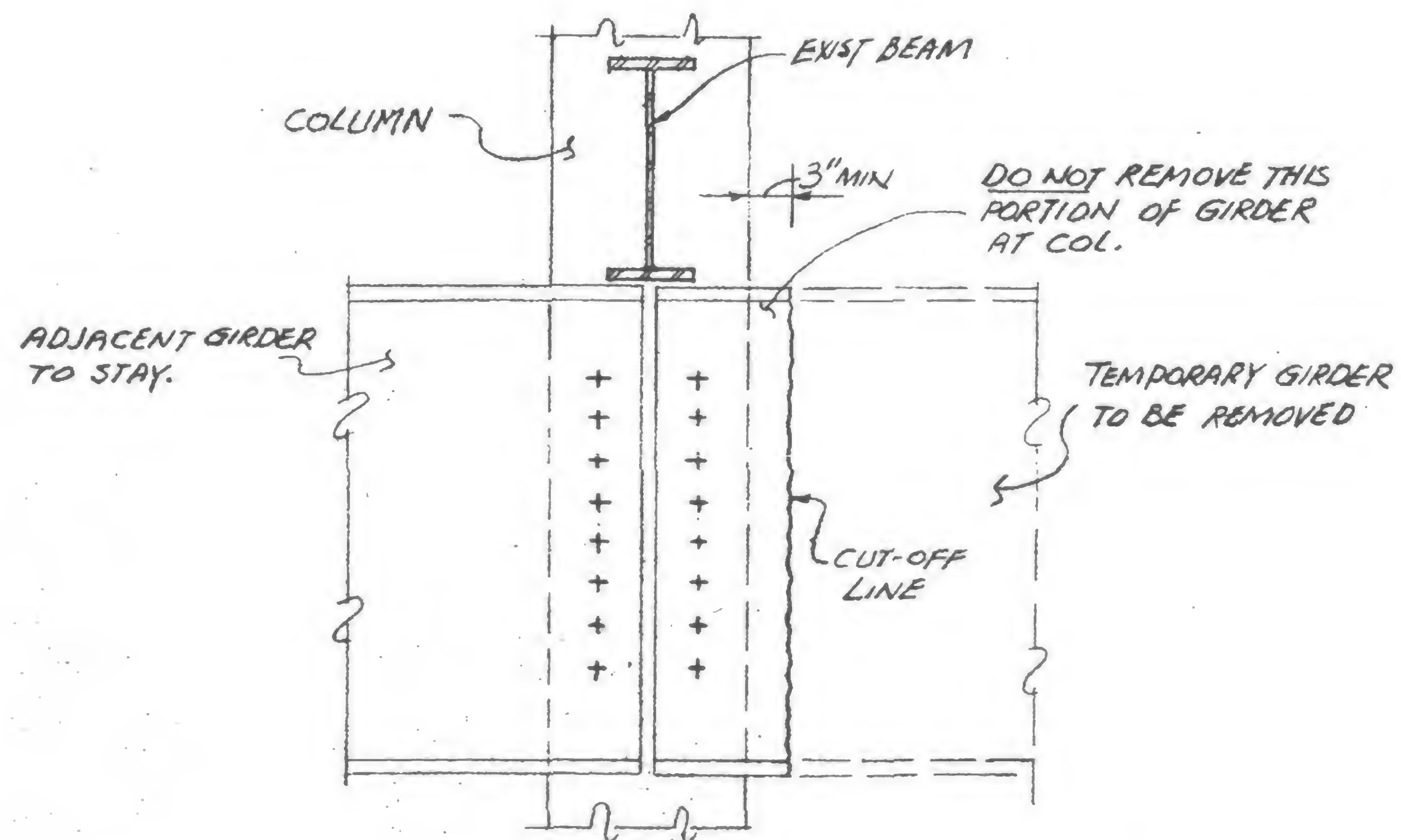
TITLE REMOVING OF TEMPORARY GIRDERS AT EXPANSION JOINTS

DATE 1-14-71

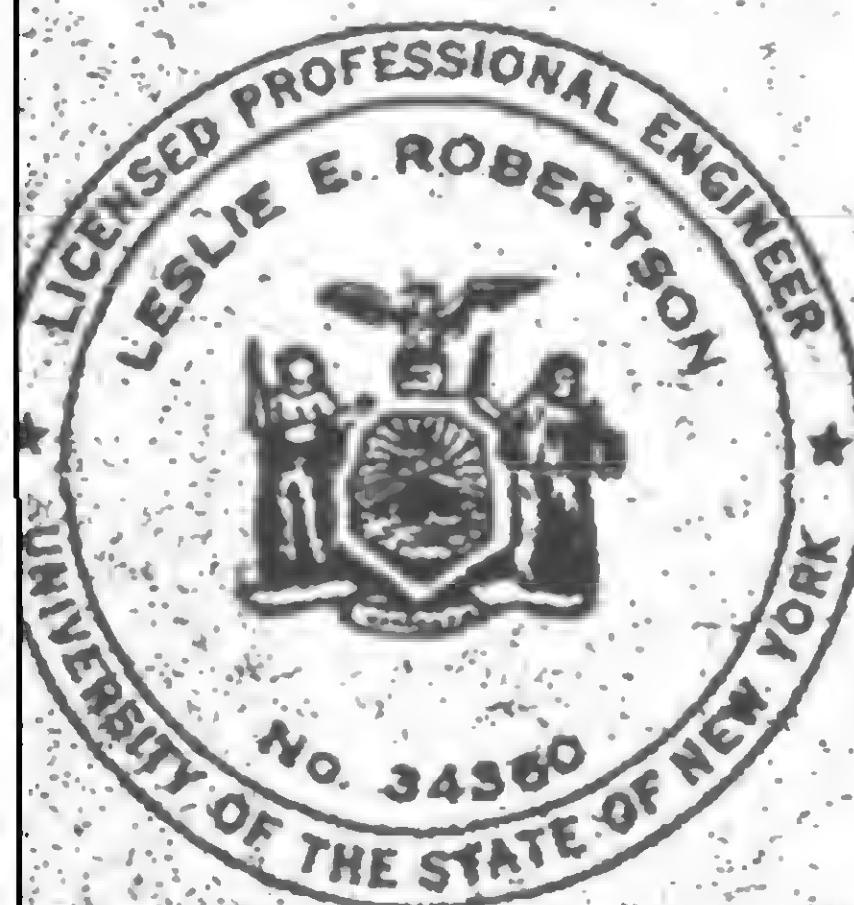
## REVISIONS



DETAIL 'A'



DETAIL 'B'



DESIGNED

E.L.

DRAWN

E.L.

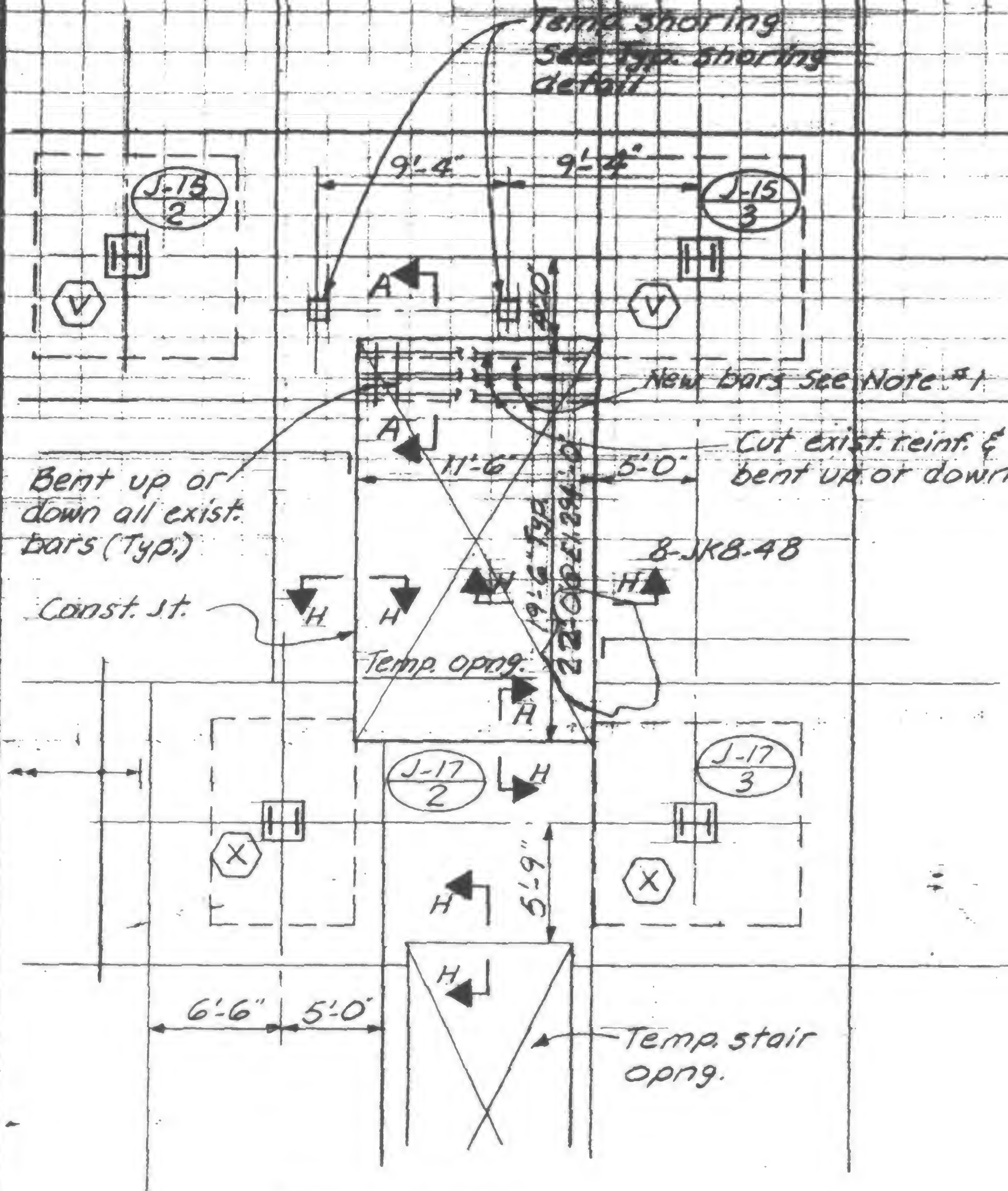
REVIEWED







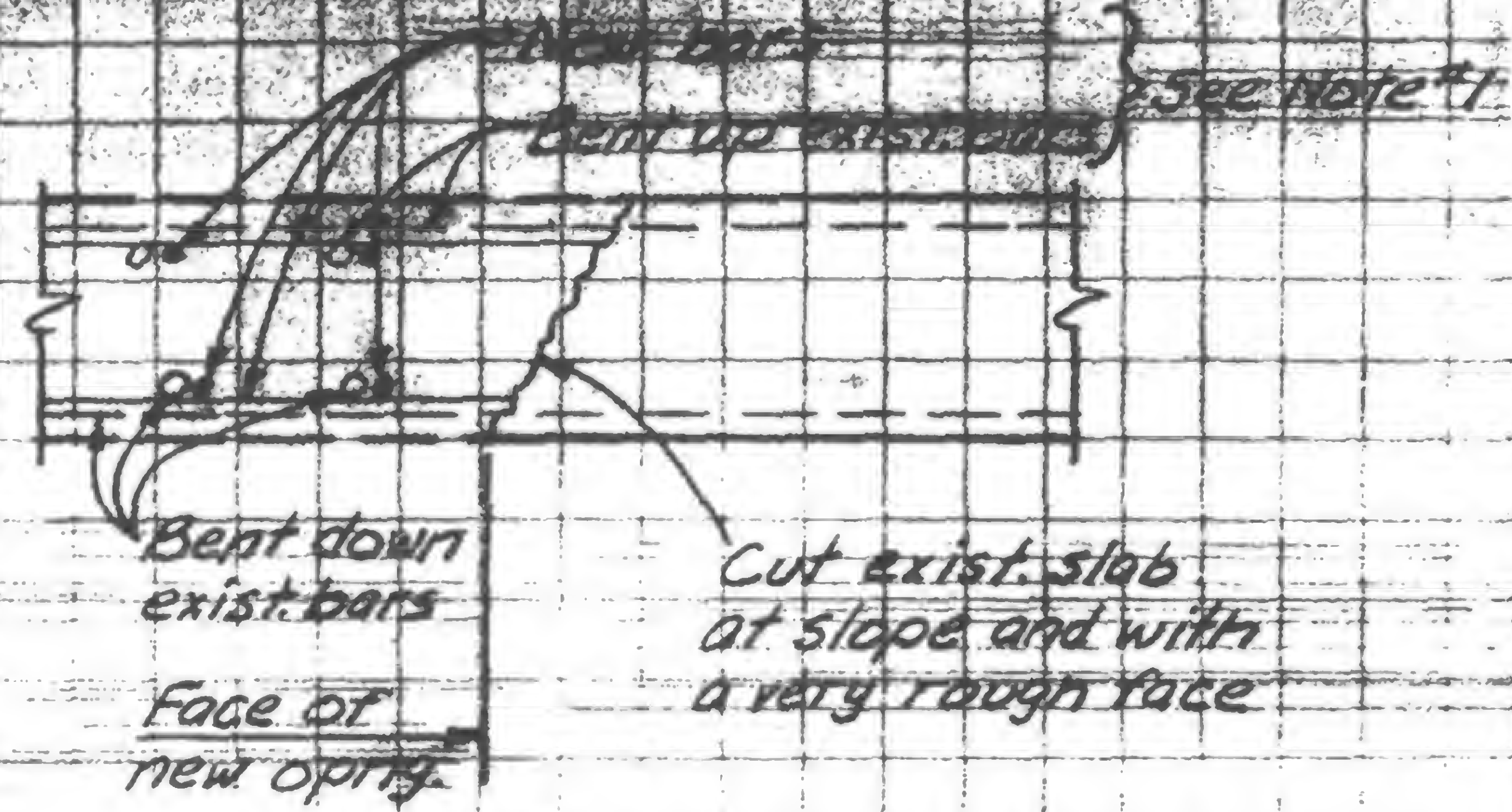
7/26/71



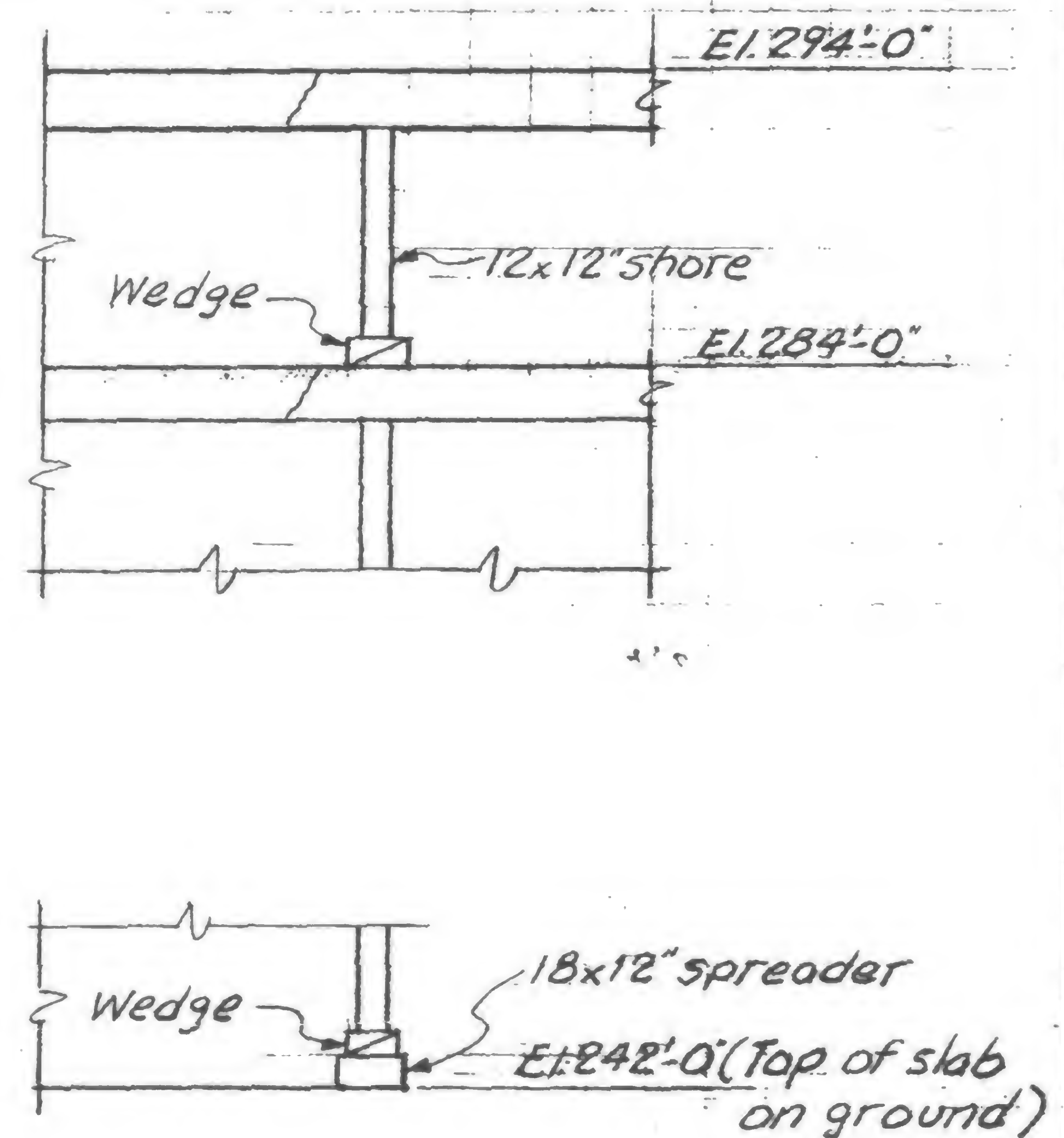
Part Plan  
 El. 294, 284, 274, 264 & 253

Note #1

When temporary opening is poured, straighten up all existing bars and provide new add. reinf. of bars sizes same as existing.



Section A-A



Typical Shoring Detail



DESIGNED  
 M. RAMANI

CHECKED  
 J. FRANQUI

REVIEWED

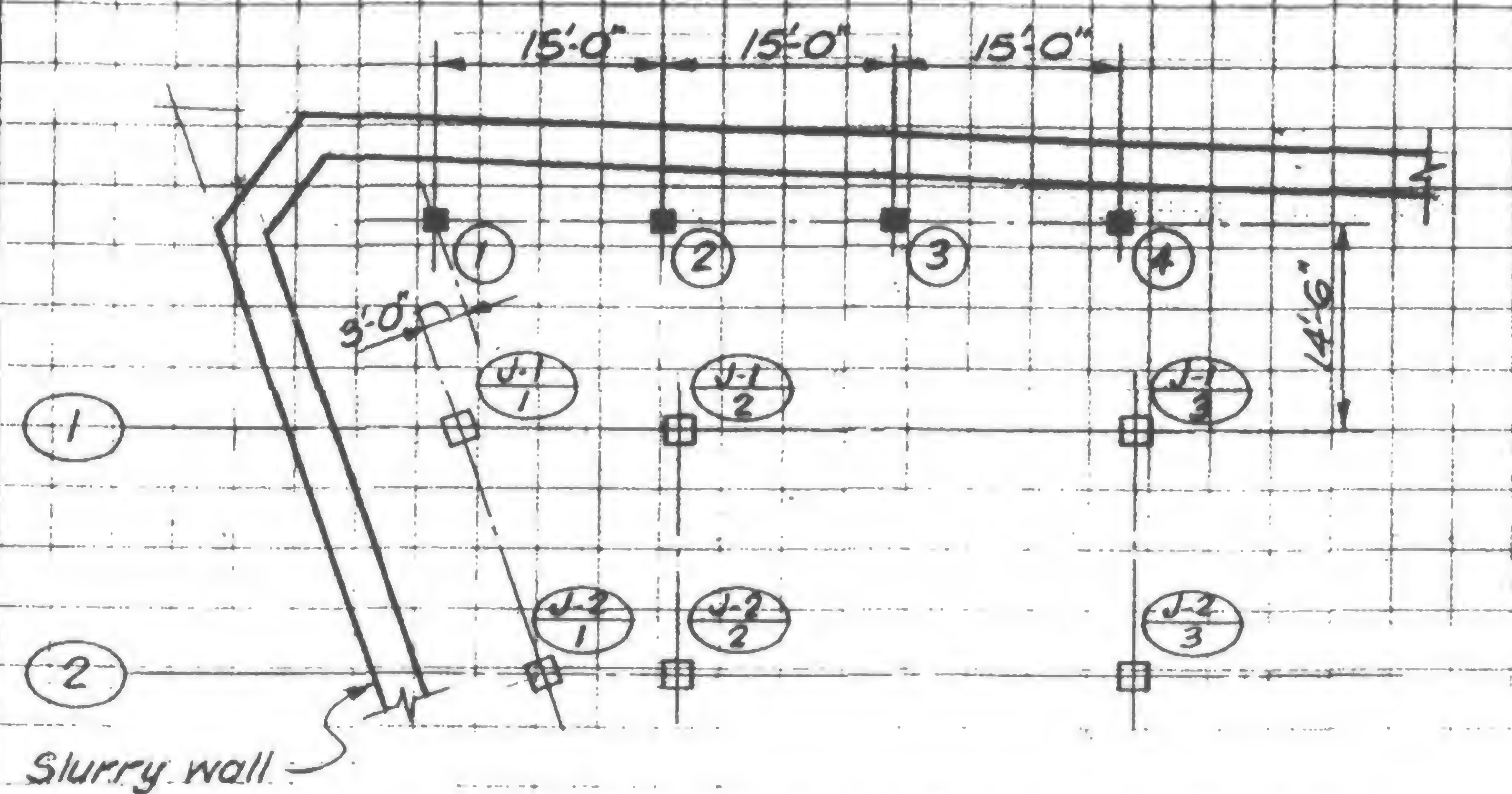
19-JK-1045



REVISIONS

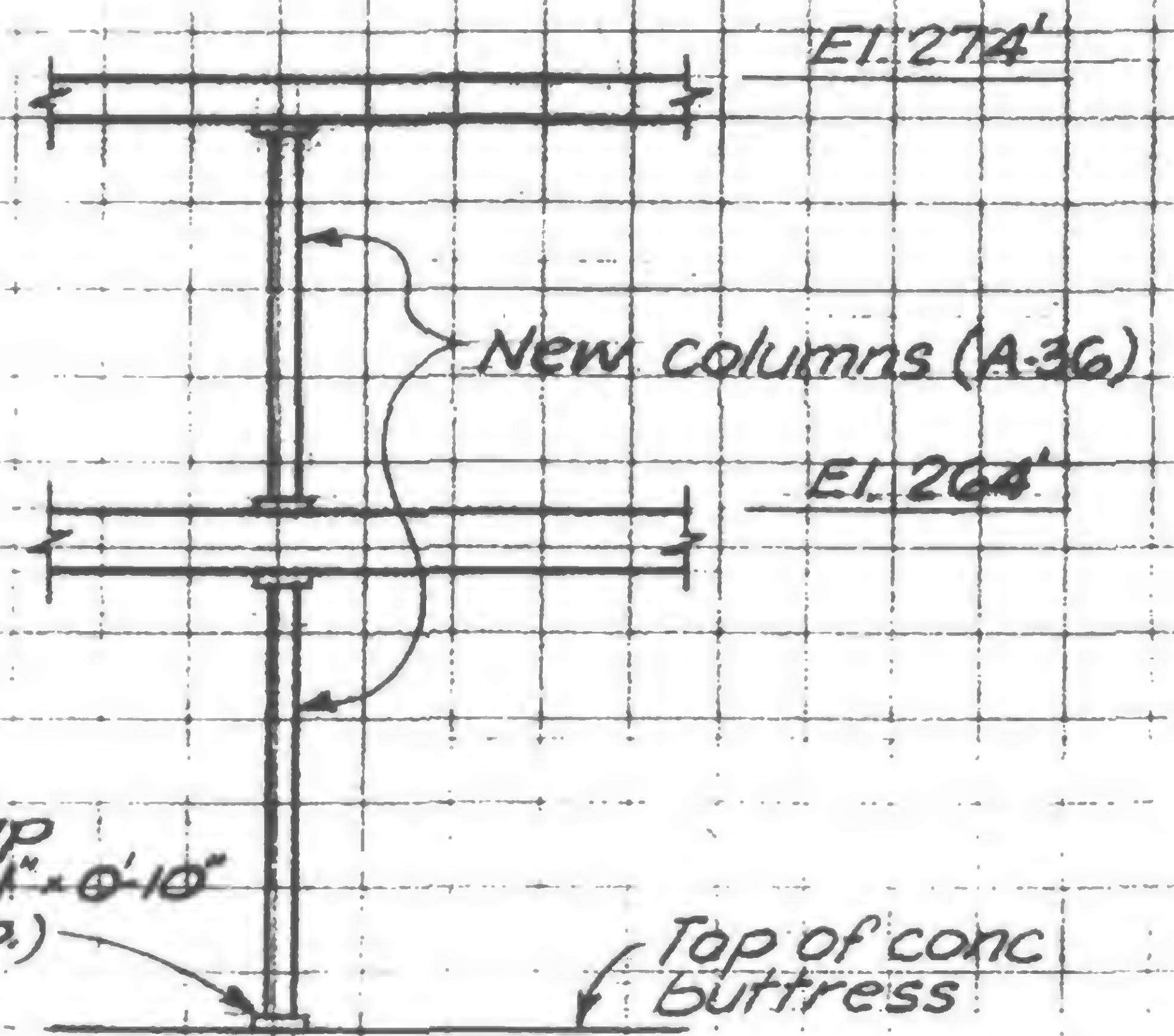
(CHANGE NO. 564025-21)

REFERENCE: LETTER PNYA TO SHER on 9-8-71



PART PLAN AT NW CORNER

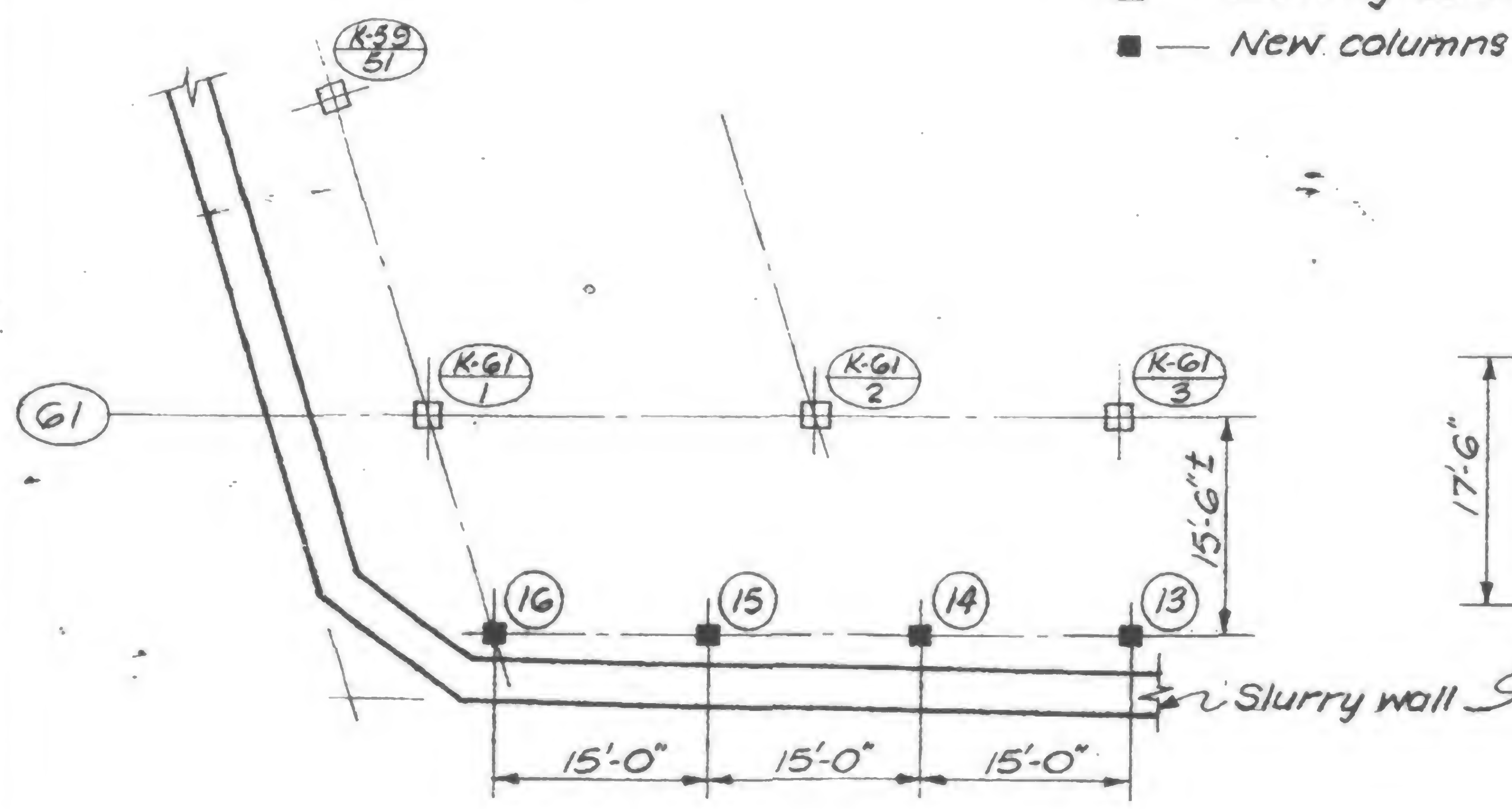
(1/16" = 1'-0")



SECTION

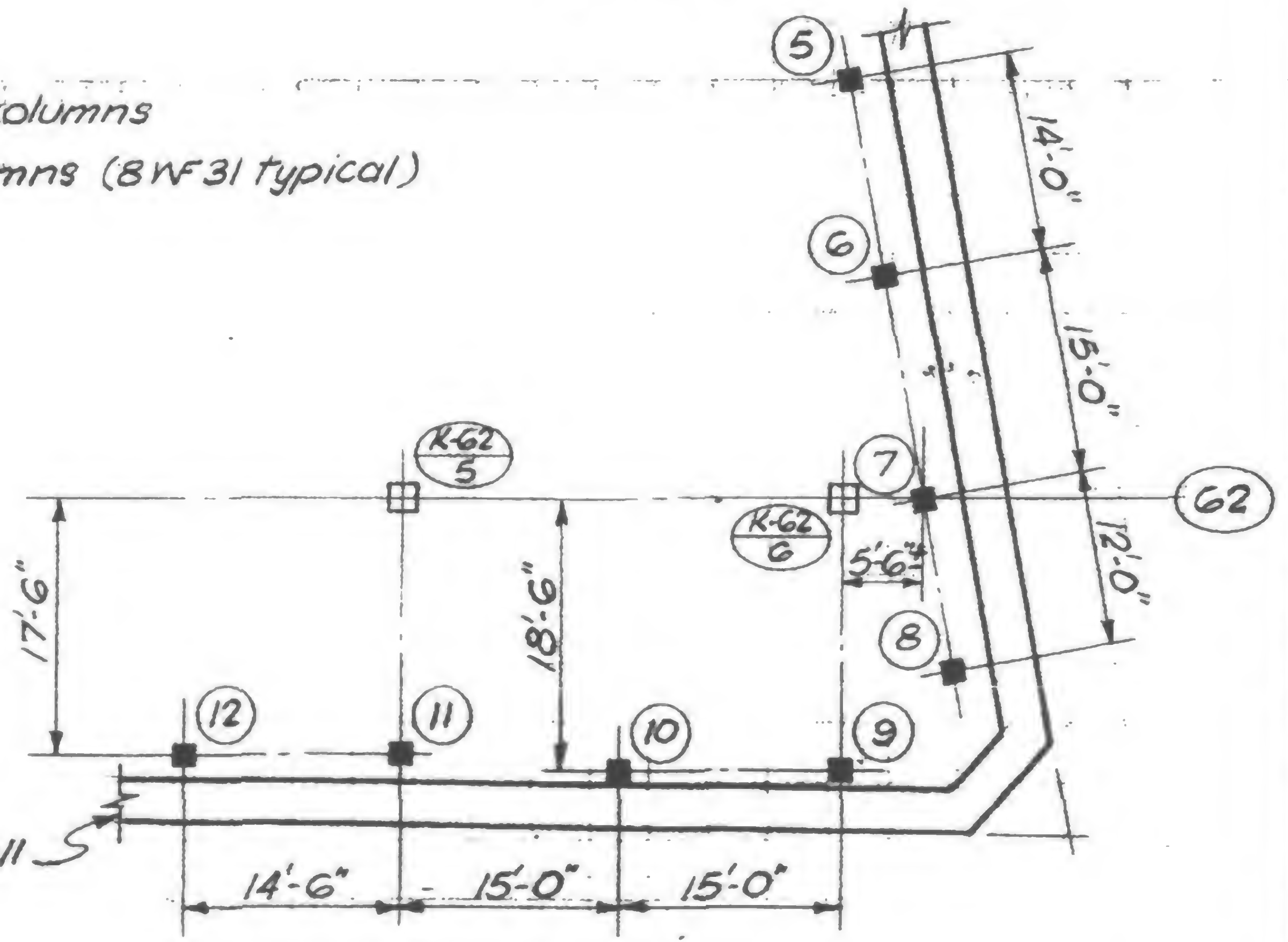
(1/8" = 1'-0")

- — Existing columns
- — New columns (8WF31 typical)



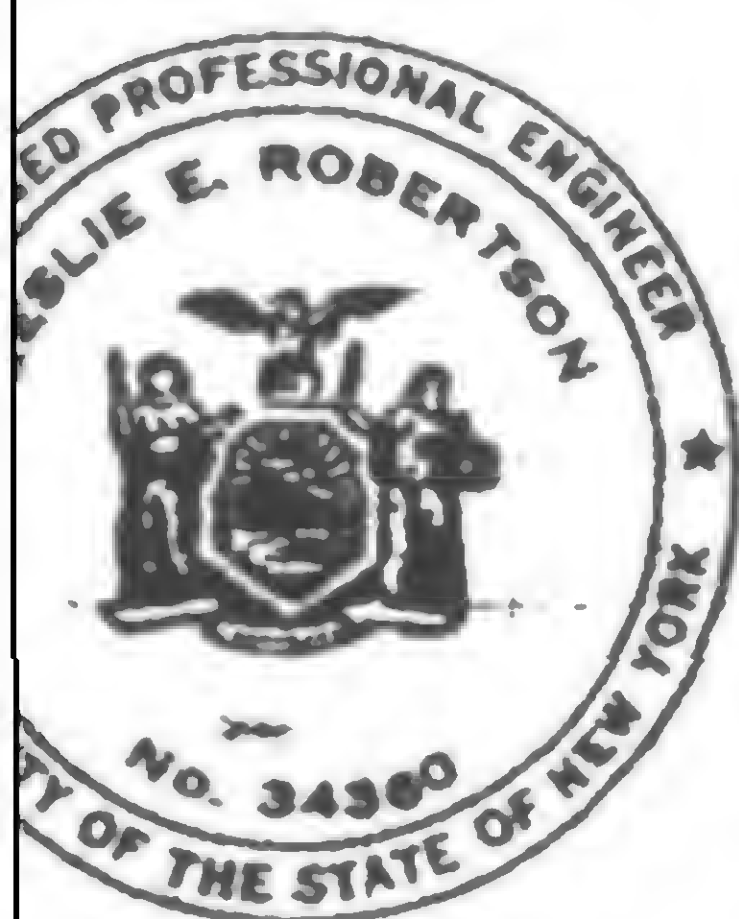
PART PLAN AT SW CORNER

(1/16" = 1'-0")



PART PLAN AT SE CORNER

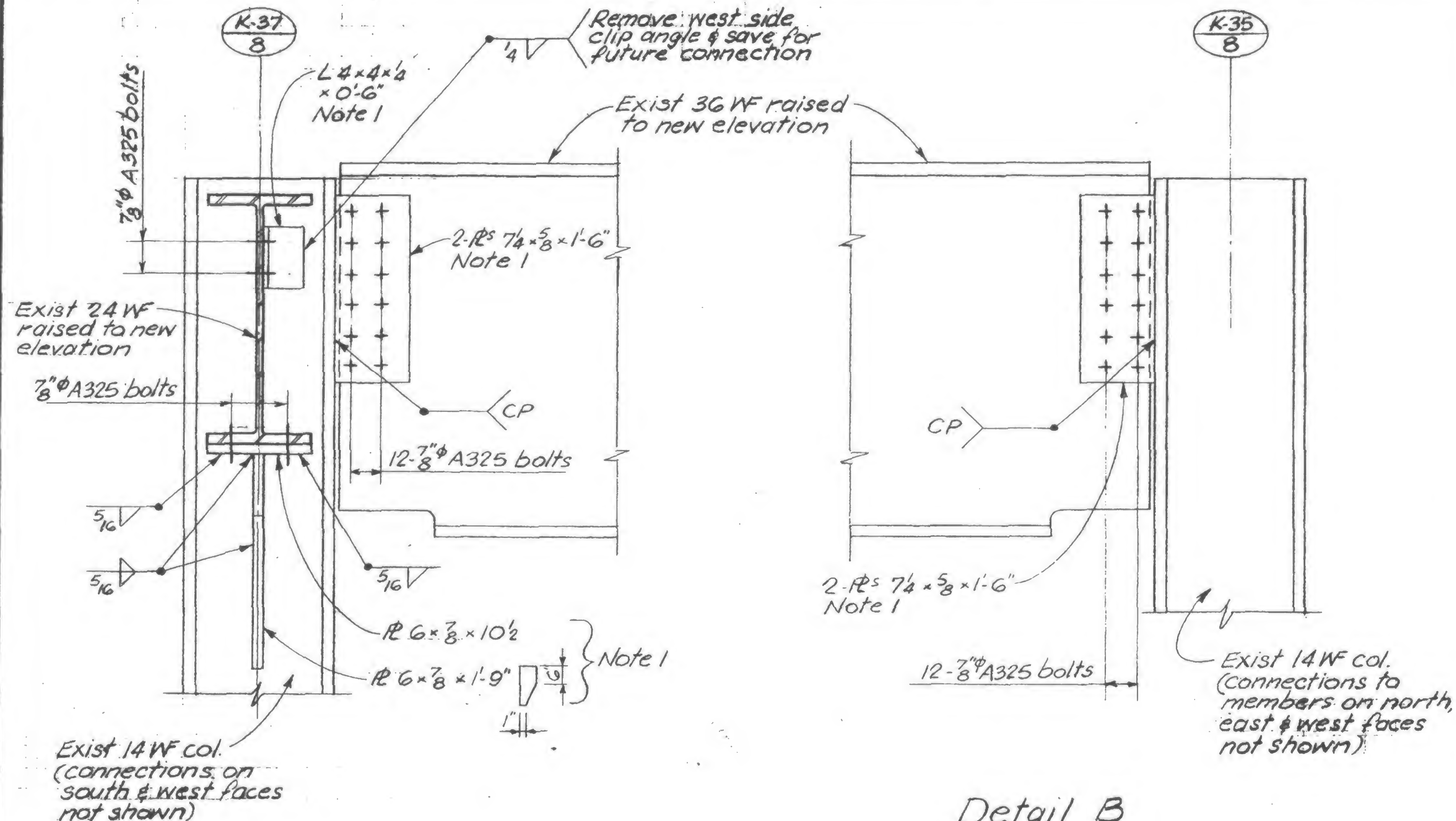
(1/16" = 1'-0")



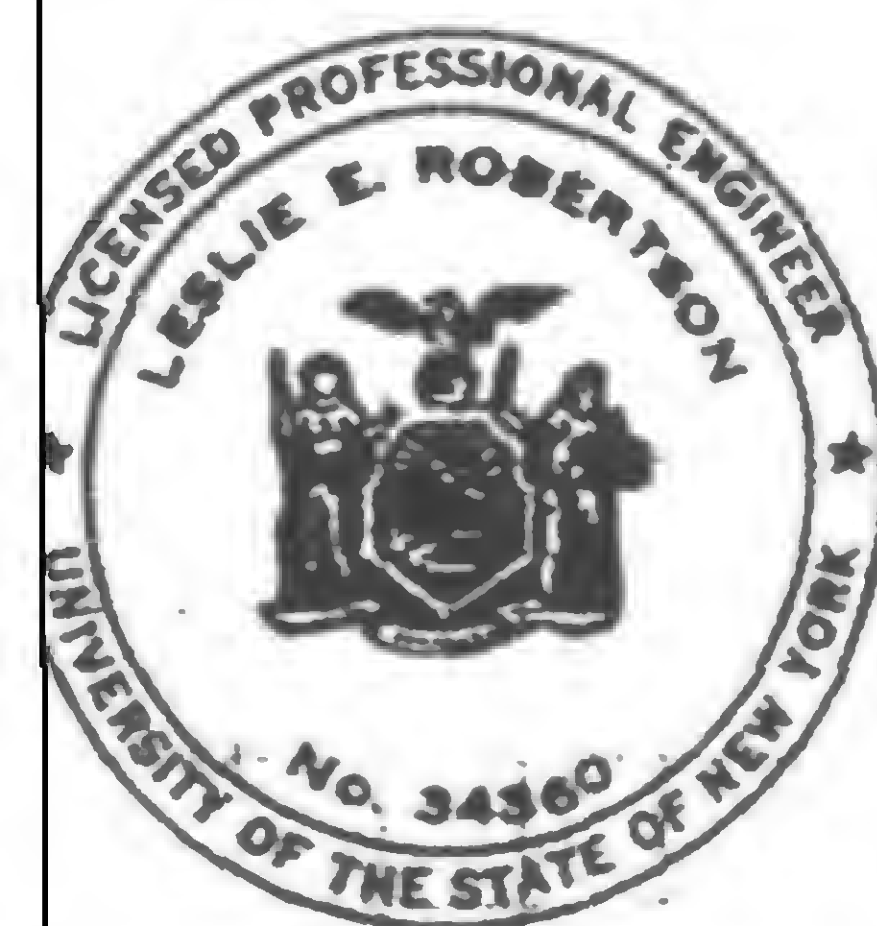
DRAWN  
SC  
REVIEWED



## REVISIONS



Note 1: Remove existing connection and reuse material in new location if in satisfactory condition. Bolts must be new material.



DESIGNED  
HR

DRAWN  
SC

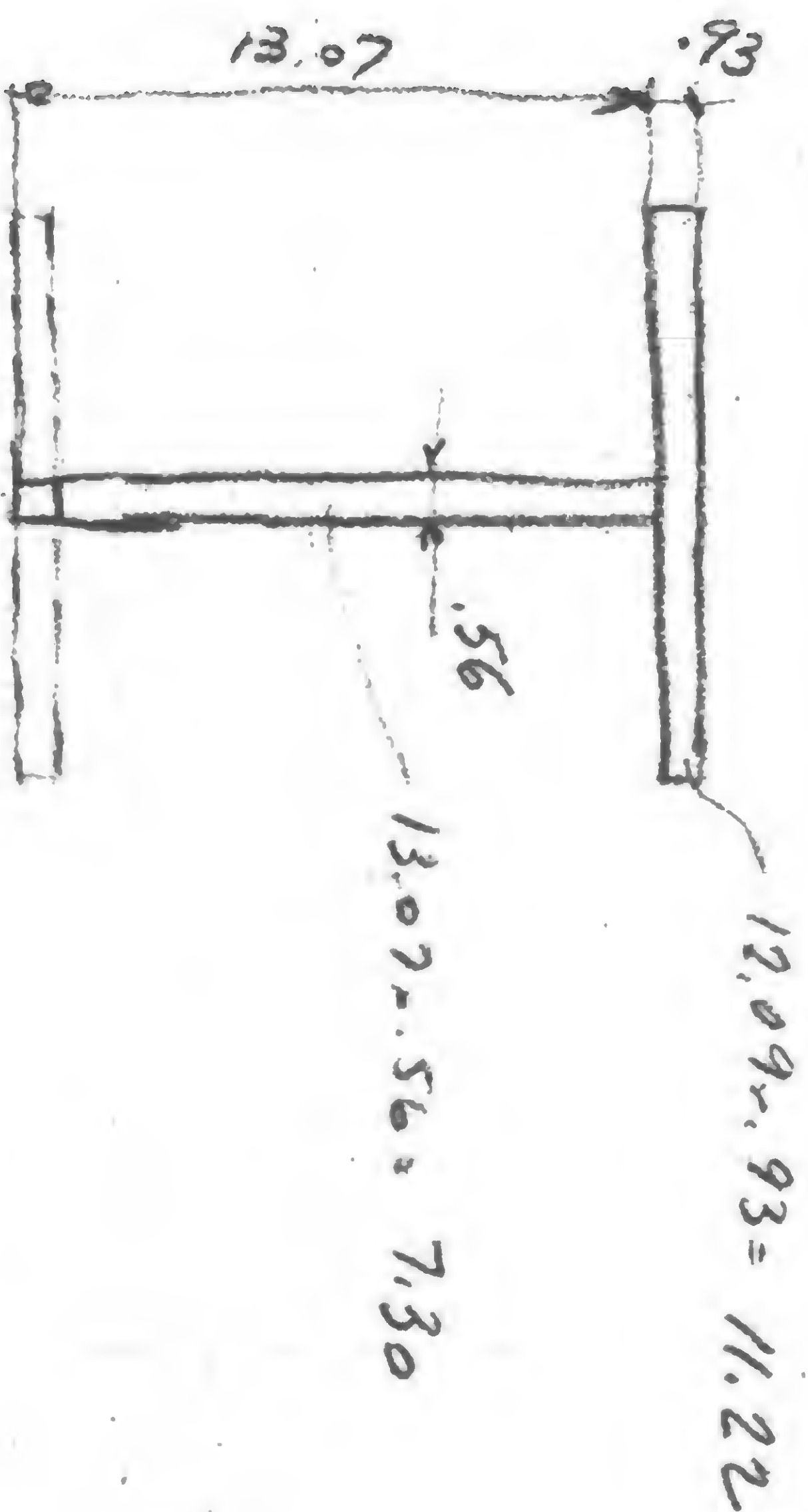
REVIEWED

19-K-1047.1



DATE	10-4-71	Sheet No.
PREPARED BY	Hox	
APPROVED		

19-K-1047 DET D.  
2445120 (330'6) + 3645245 (329'4") = 125K



$$\begin{array}{rcl}
 11.22 \times .46 & = & 5.16 \\
 \hline
 7.30 \times 7.47 & = & 54.5 \\
 18.52 & & \\
 \hline
 59.7 & & \\
 \hline
 14-3.22 & = & 10.78 \\
 3.22 & & \\
 \hline
 7.30 \times (13.07)^{1/2} & = & 103.7 \\
 11.22 \times (2.76)^2 & = & 85.5 \\
 7.30 \times (4.25)^2 & = & 131.8 \\
 \hline
 320.9 & & 
 \end{array}$$

$$S = \frac{320.9}{10.78} = 29.8$$

$$M = 125 \times 9.25 = 1152$$

$$S_{\text{avg}} = \frac{1152}{25} = 46 \text{ Hz}$$

$$\frac{1152}{22} = 52.4 \text{ Hz}$$

✓

Reinf Read

$$\begin{array}{r} 18.32 + 3.22 = 59.7 \\ \underline{5.72} + 13.75 = 78.5 \\ 24.24 \\ \underline{138.2} \\ 5.7 \end{array}$$

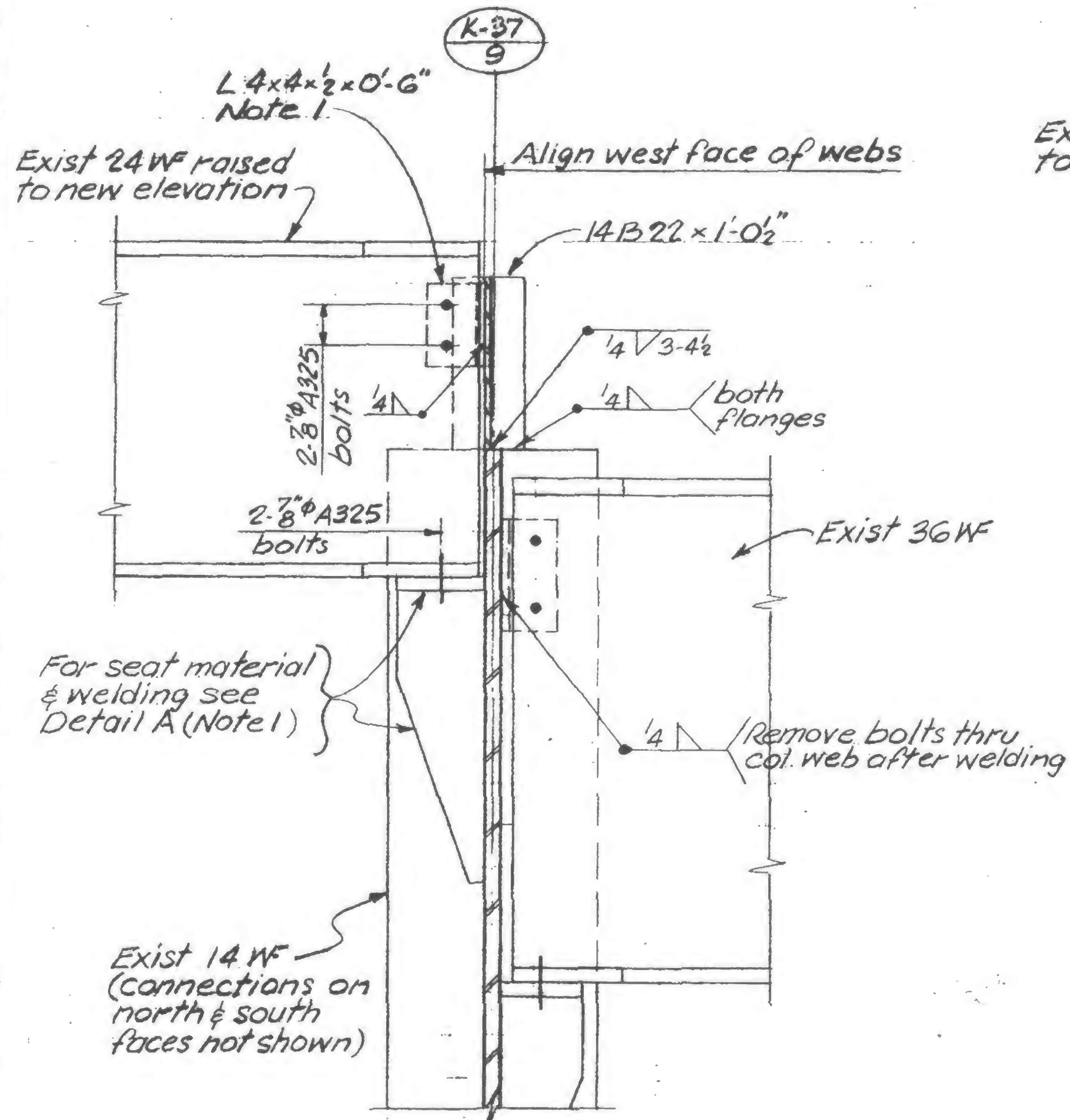
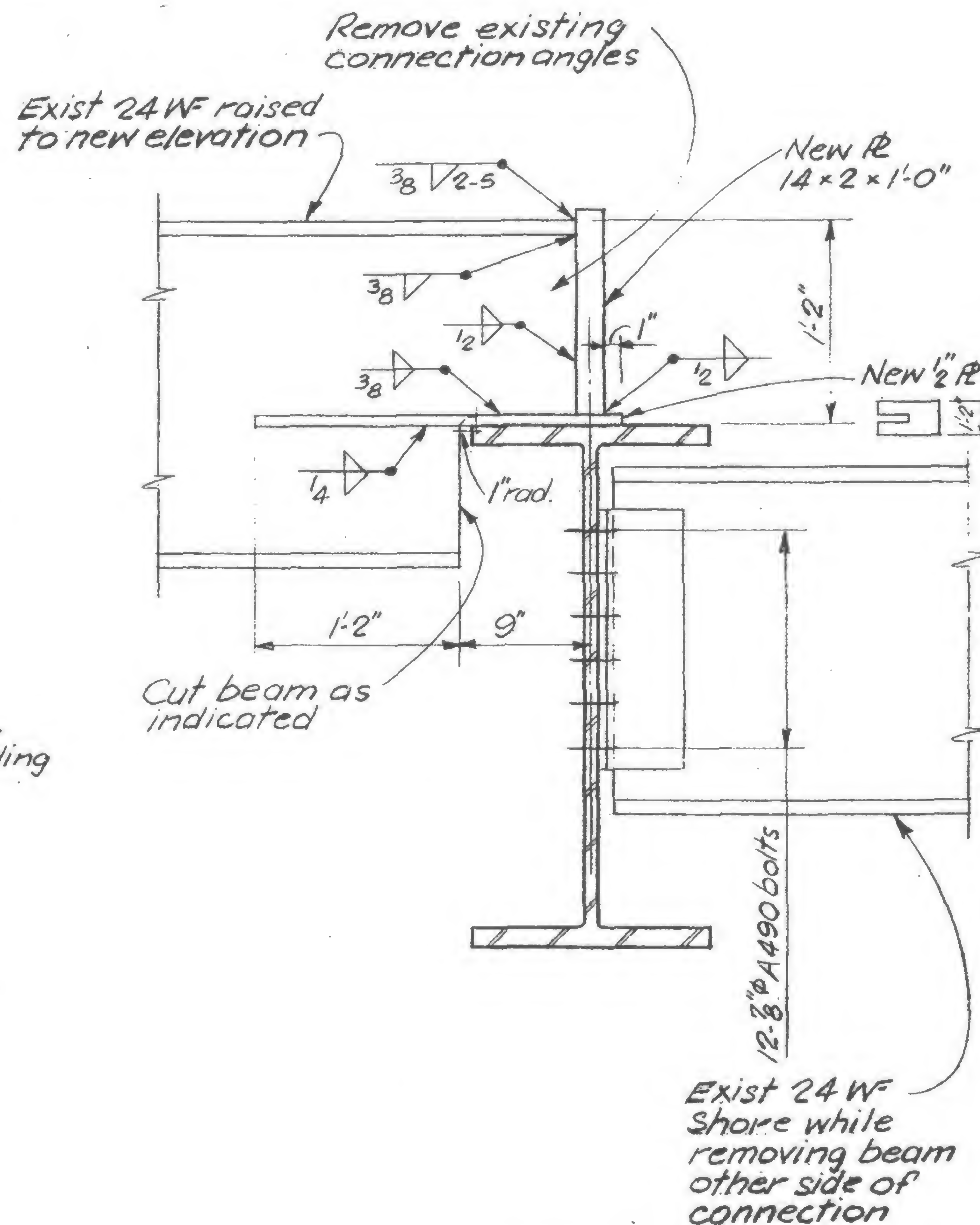
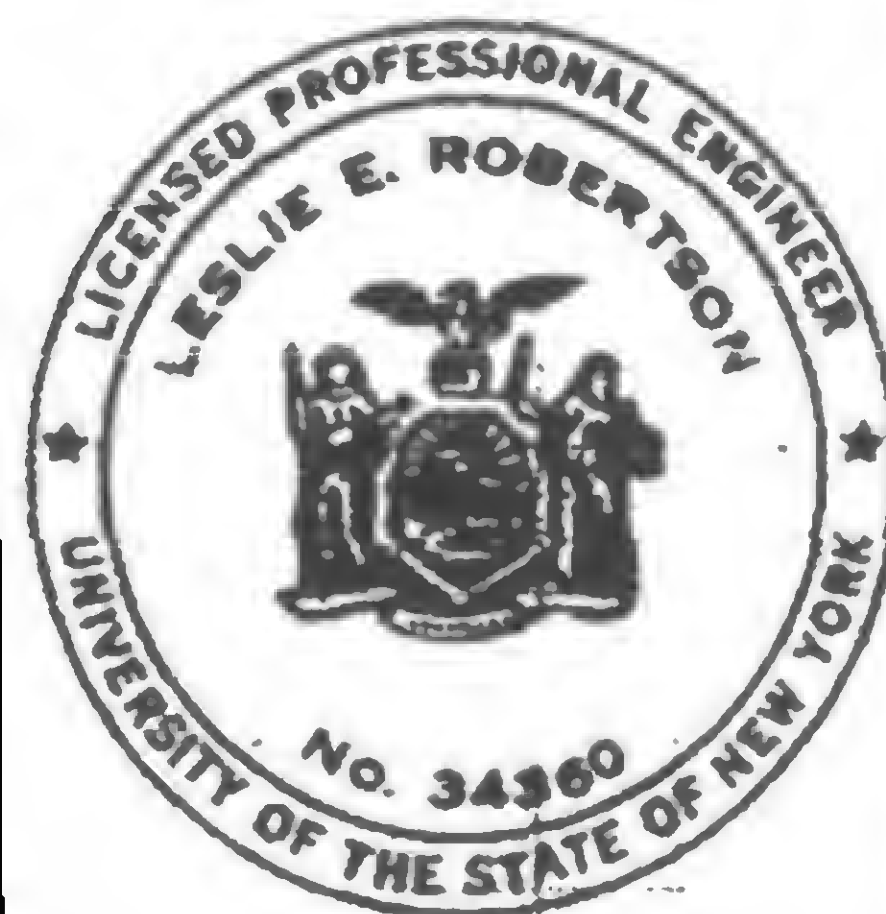
I

$18.52 \times (2.48)^2 = 114.$   
 $5.72 \times (8.05)^2 = 370$   
 $\underline{805.}$   
 $S = \frac{805}{8.3} = 97 > 52.4 \text{ OK}$

Shear  
 $\frac{125}{14.56 \times 56} = 16.5 \leq 17.0 \text{ OK}$   
 $\frac{V_{avg}}{I} = \frac{125 \times 6 \times 8.05}{805} = 7.54 \text{ ksi}$   
 $\frac{3}{8} \text{ } \cancel{A}$   
Development  
 $\frac{6 \text{ in}^2 \times 28000 \text{ ksi}}{2 \times 8.4 + 2 \times 5.6} = L = 4.7$   
 extend 1'-2"  
 $\frac{4}{5} = 14.56 \times 2 =$



## REVISIONS

Detail CDetail D

DESIGNED

HR

DRAWN

SC

REVIEWED



## REVISIONS



19-J-1048.1

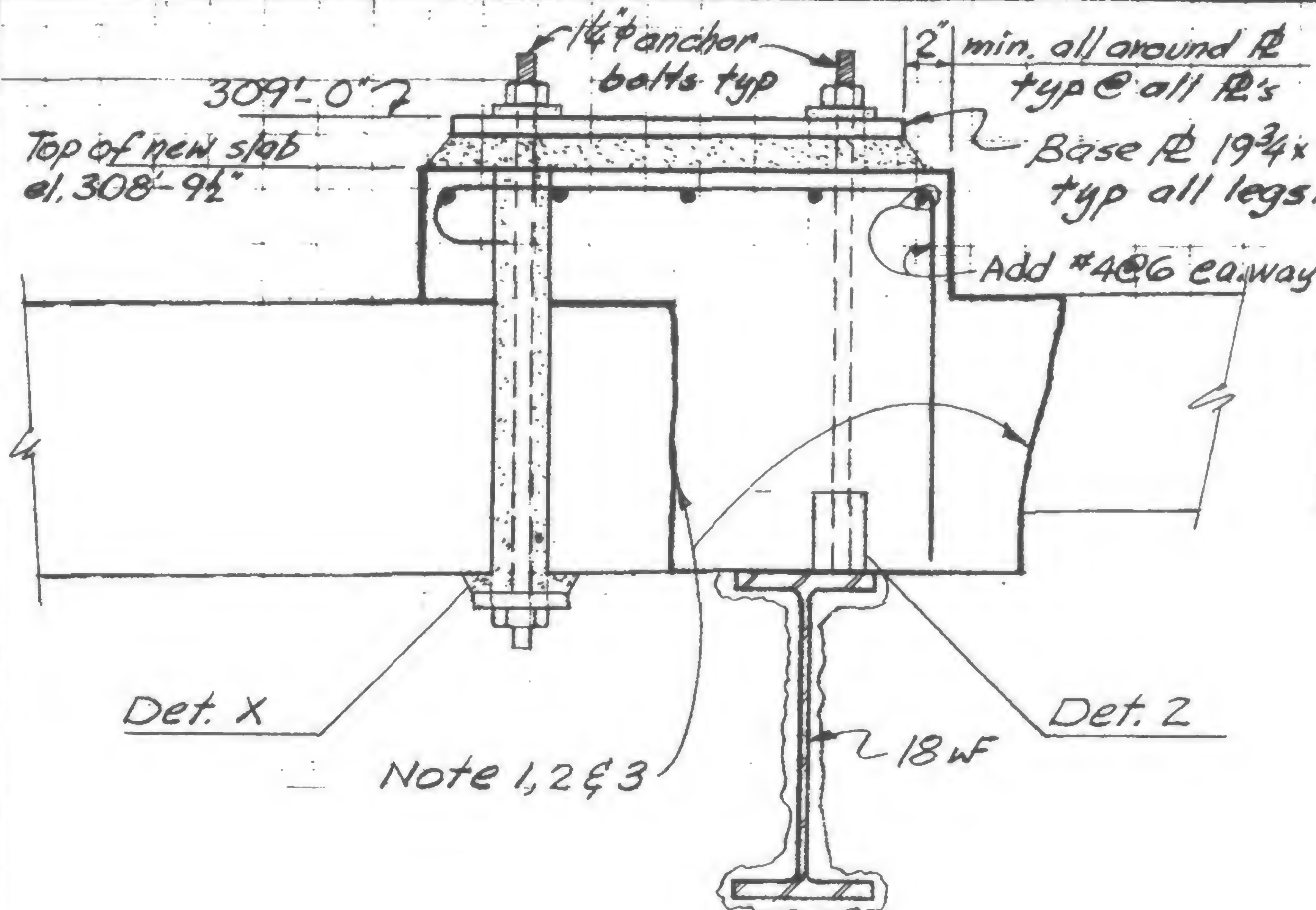


PROJECT THE WORLD TRADE CENTER

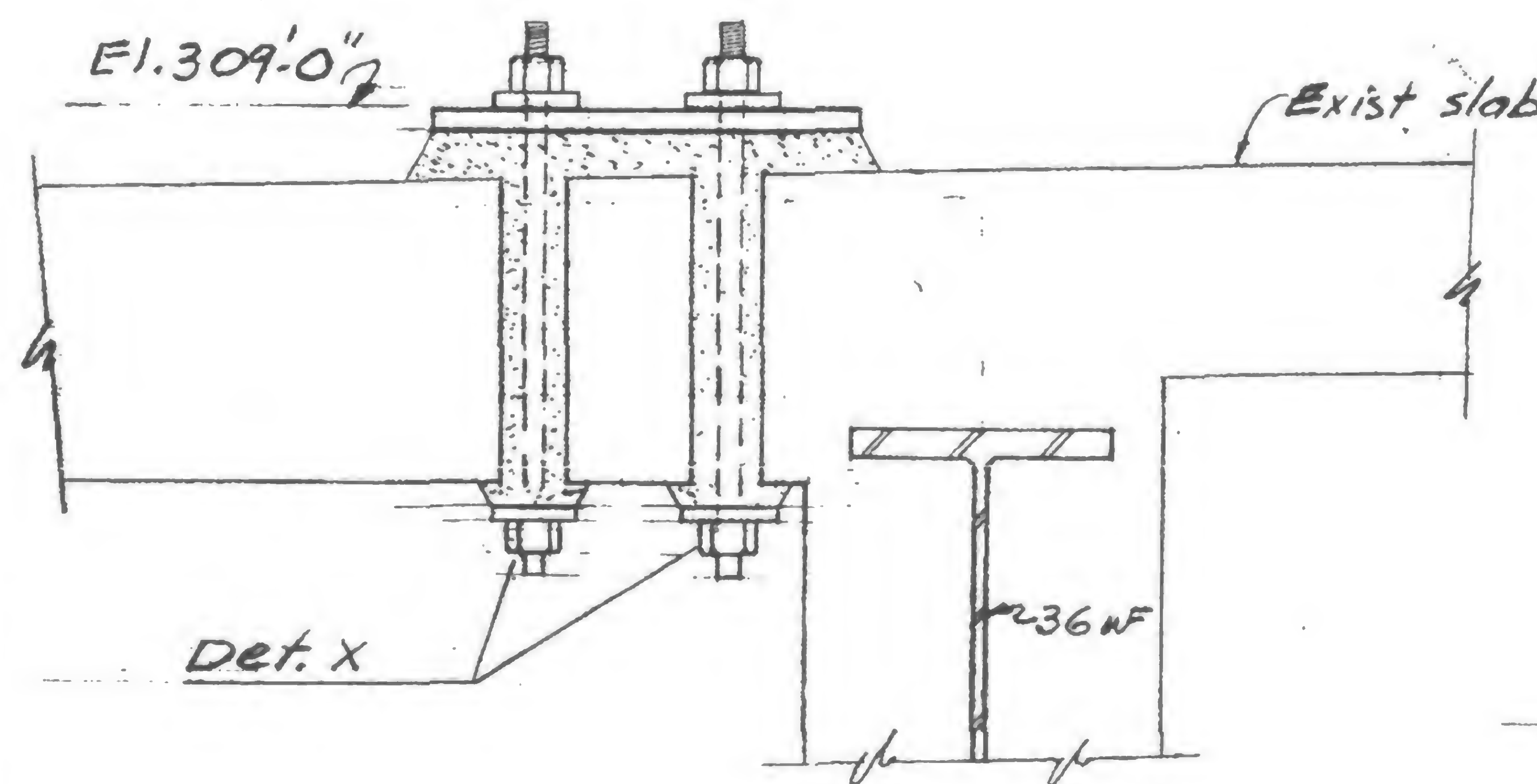
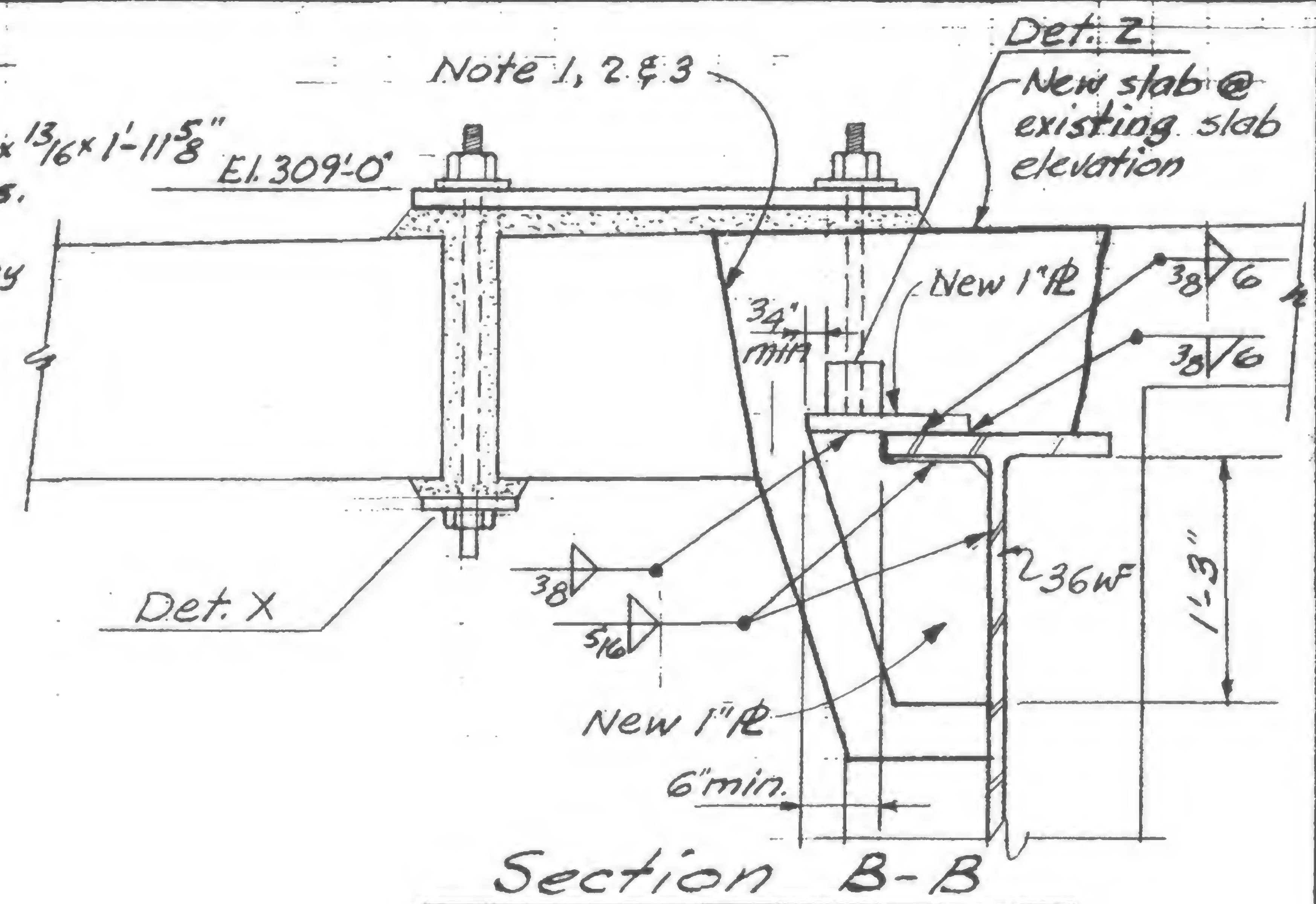
TITLE SECTIONS - CALDER STABLE

DATE 10-1-71

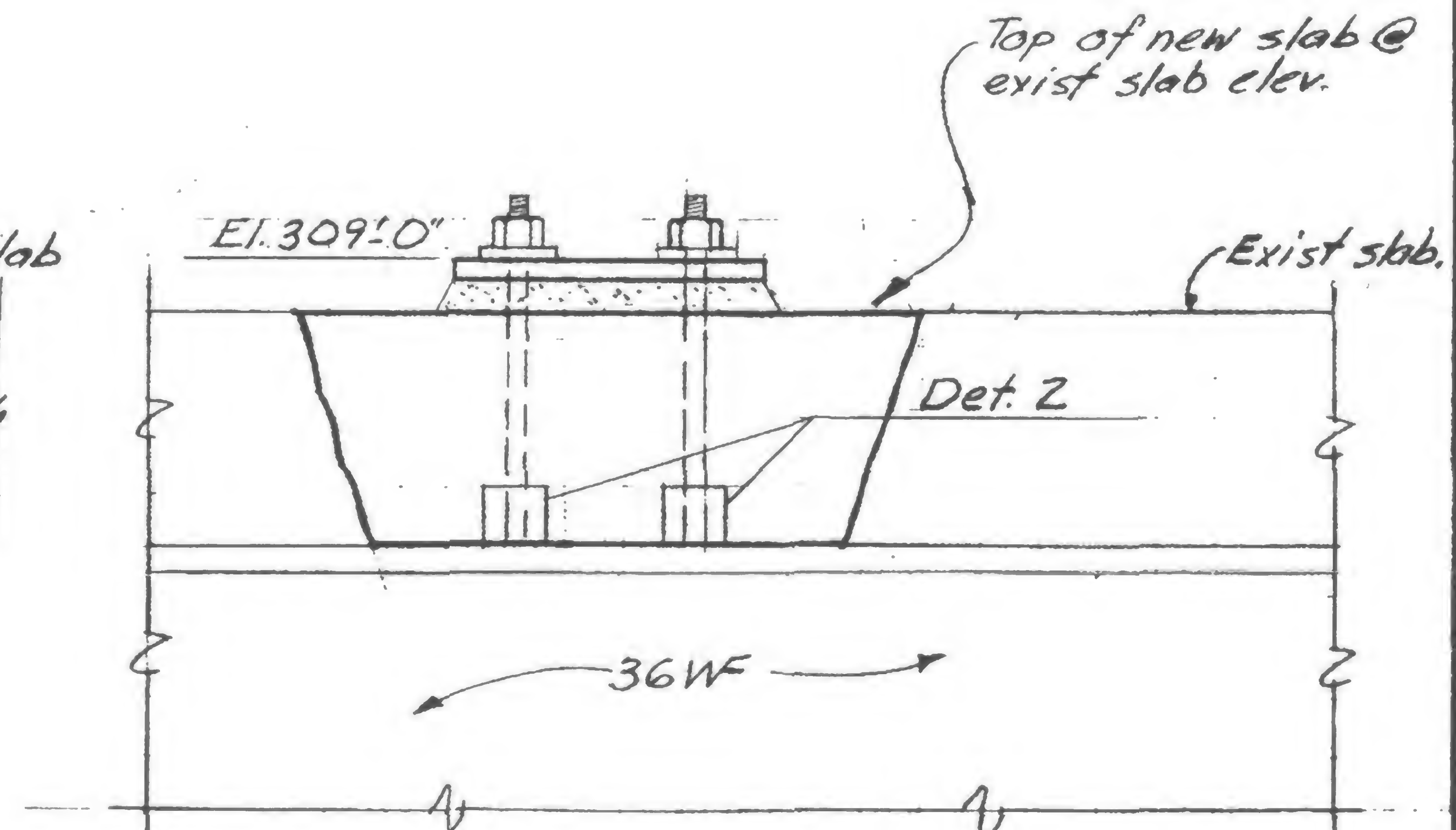
REVISIONS



Section A-A

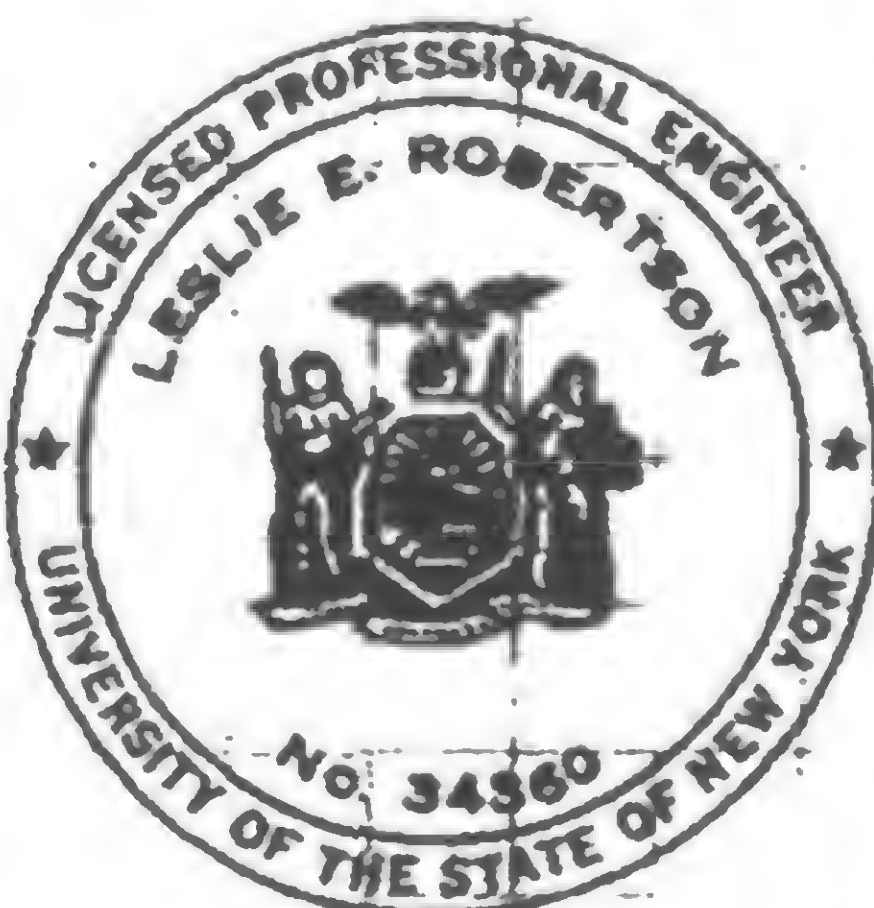


Section C-C



Section D-D

19-J-1048.2



DESIGNED

DRAWN

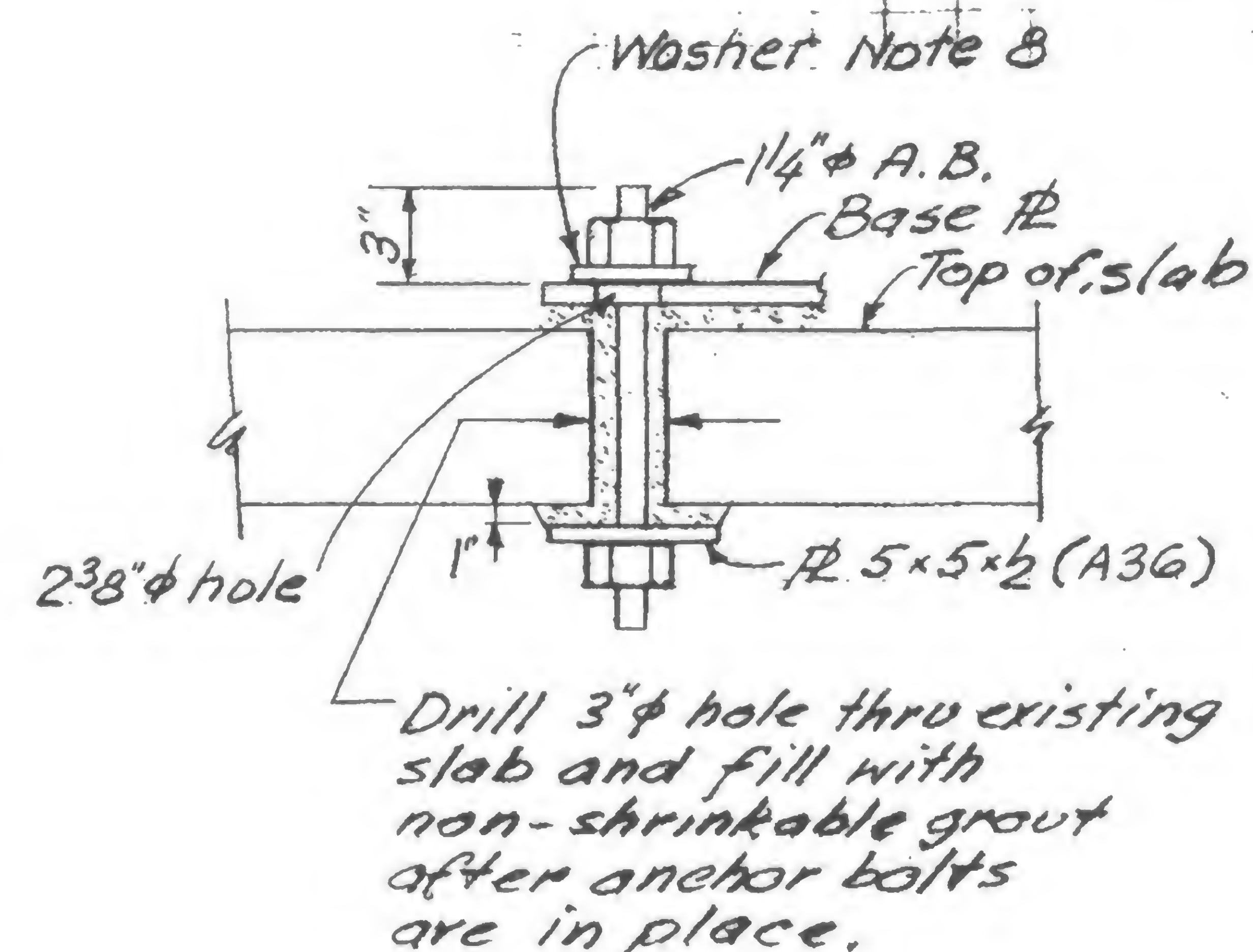
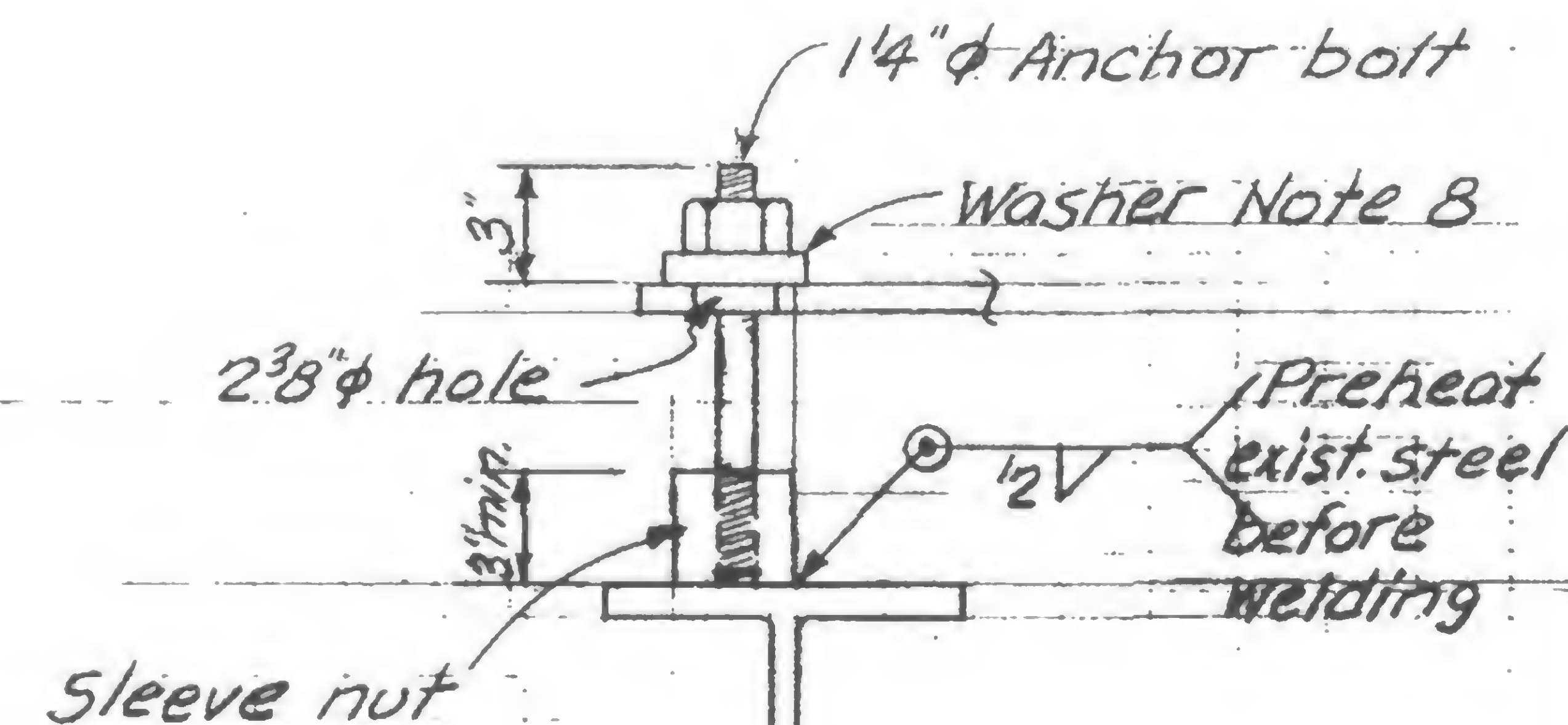
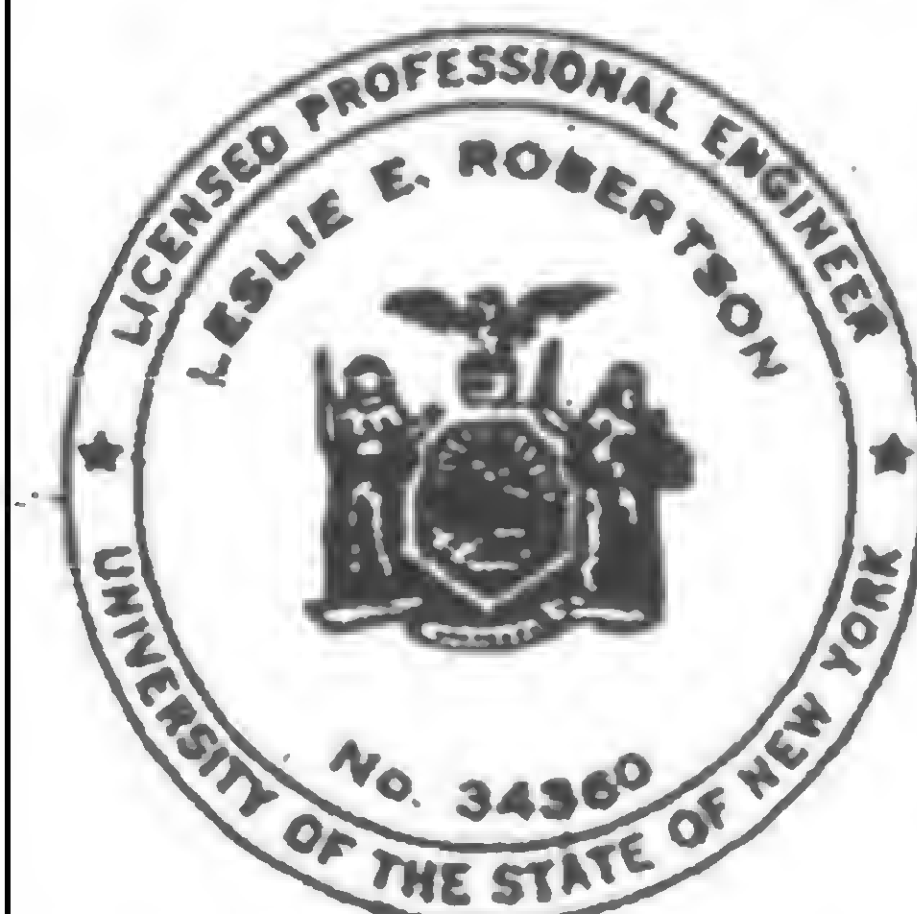
REVIEWED



## REVISIONS

## Notes:

1. Remove existing concrete slab, without damaging existing reinforcement.
2. Remove exist concrete at slope (as shown in sections) and with very rough surface.
3. Prior to casting a new slab, all exist surfaces shall be completely coated with approved epoxy bonding compound.
4. All new concrete shall be approved "non shrinkage" type  $f_c' = 4000$  psi.
5. All the work shall be carried out according to the Project specifications.
6. Location of legs and other detail are as supplied by the PNYA sketch SK-CS5-0, SK-CS5-1, 2 & 3 dated 5-10-71
7. All field welds shall be made with E70xx electrodes.
8. All washers shall be  $\#4 \times 1 \times 0.4$  (A36) with  $15/16"$  hole.

Detail XDetail Z

DESIGNED

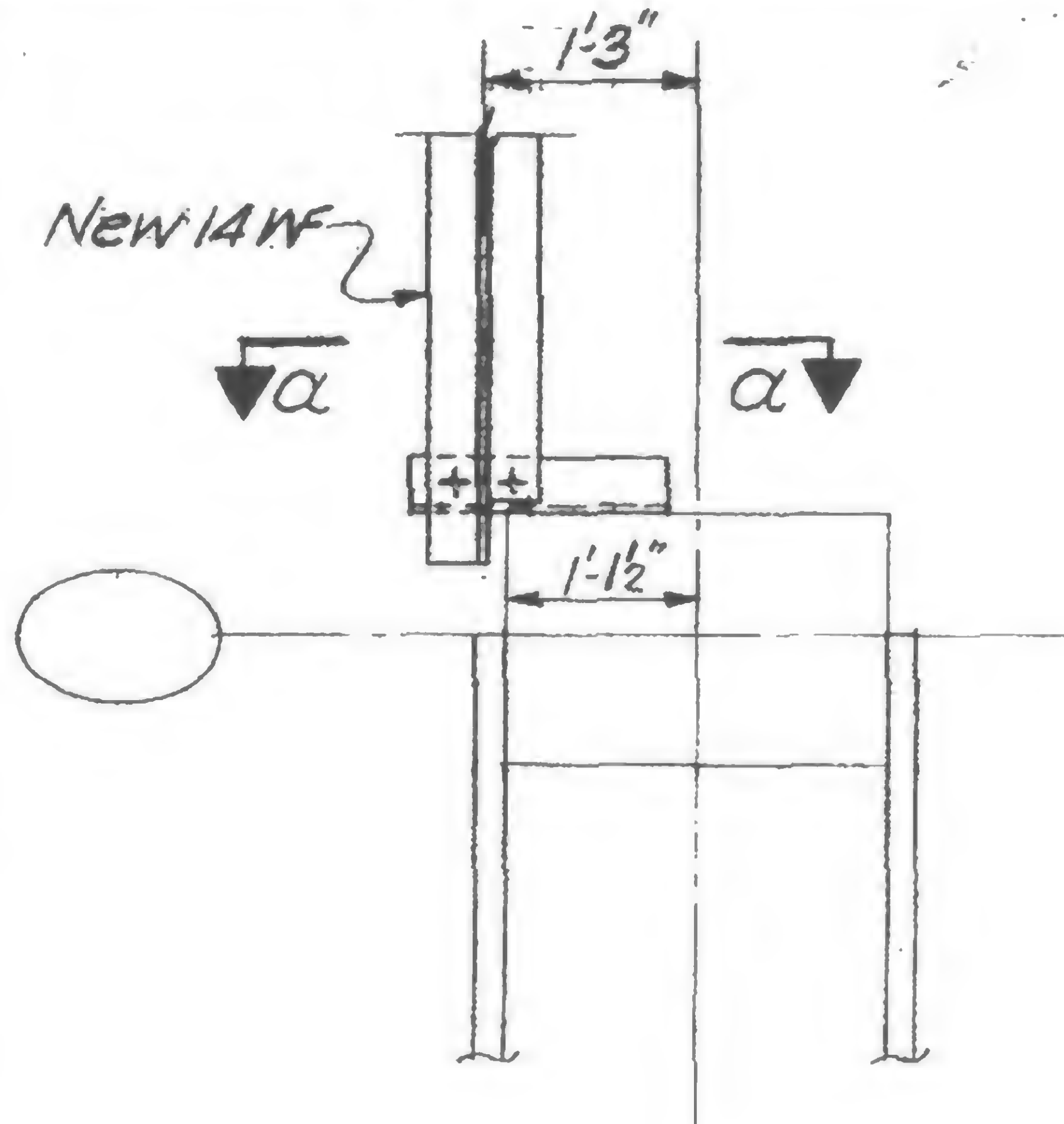
DRAWN

REVIEWED

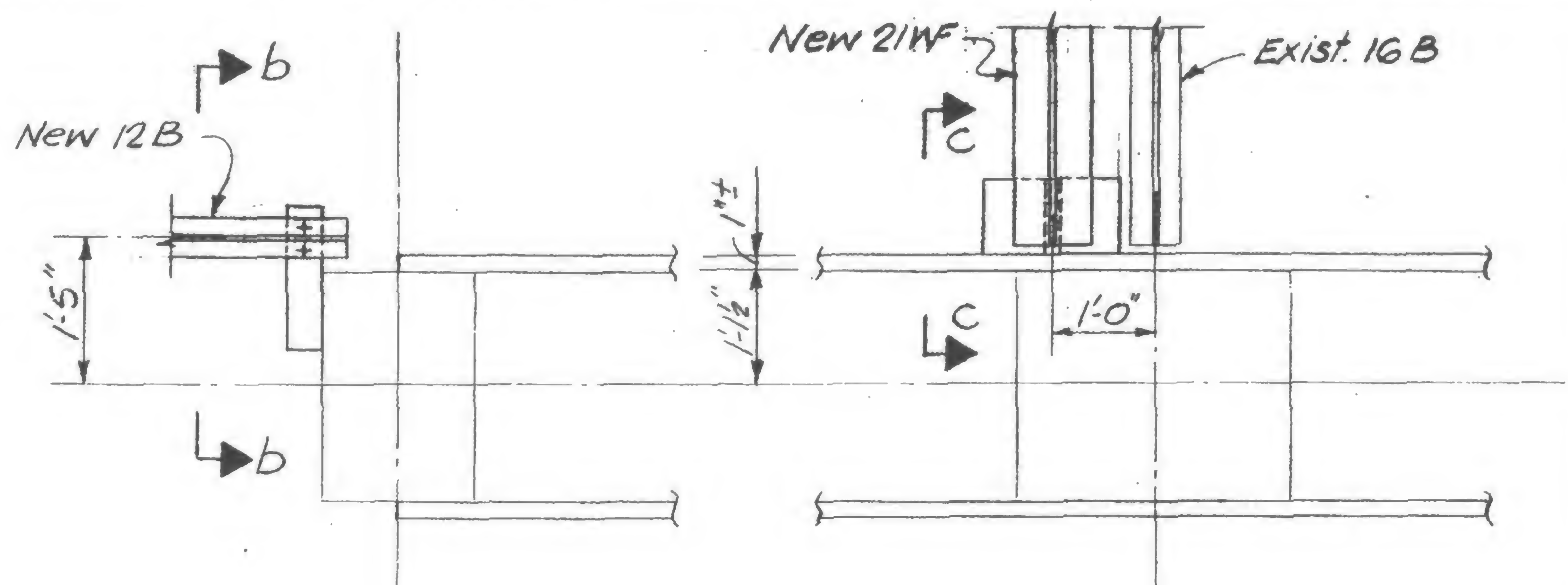
19-J-1048.3



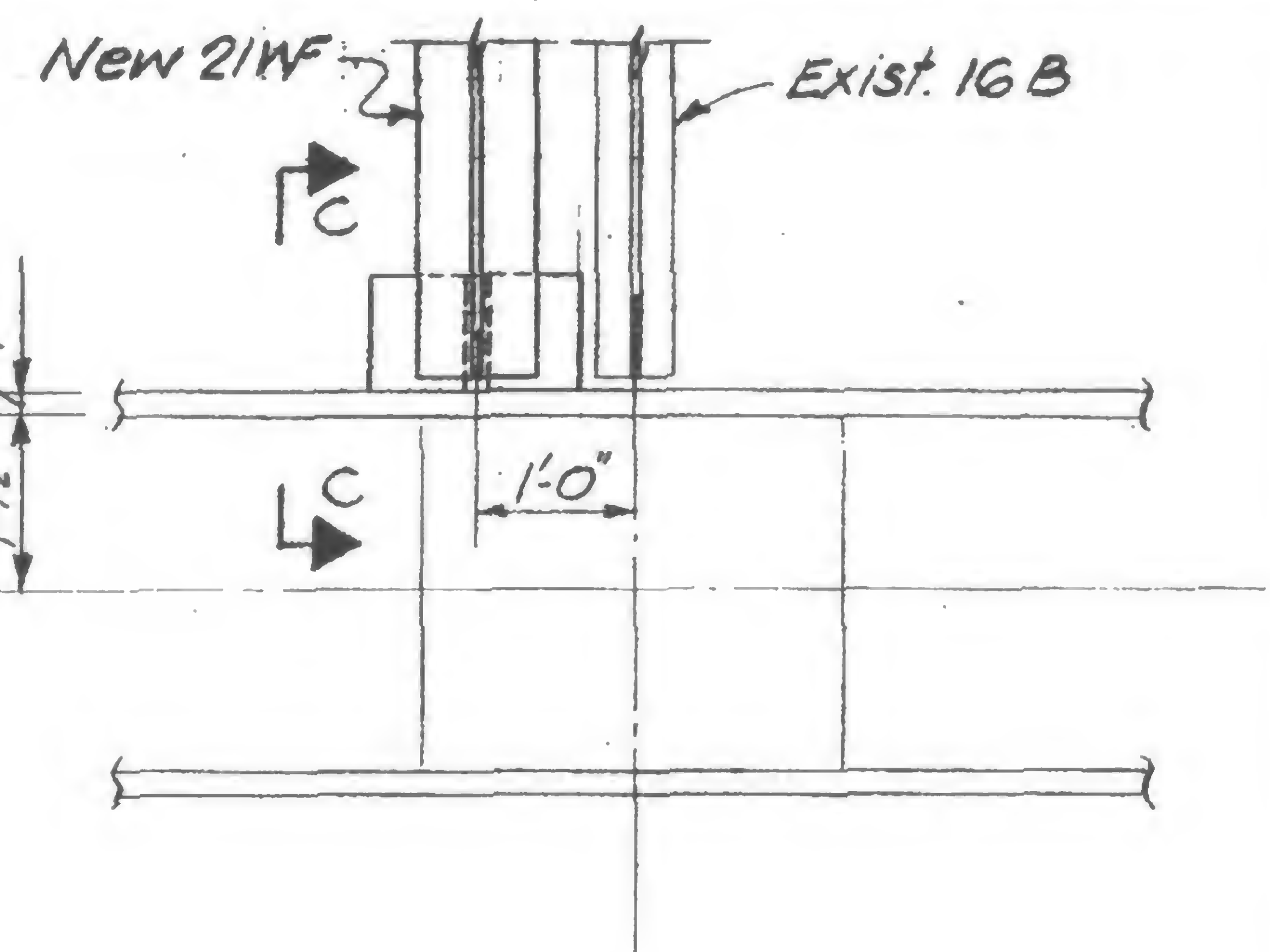
REVISIONS



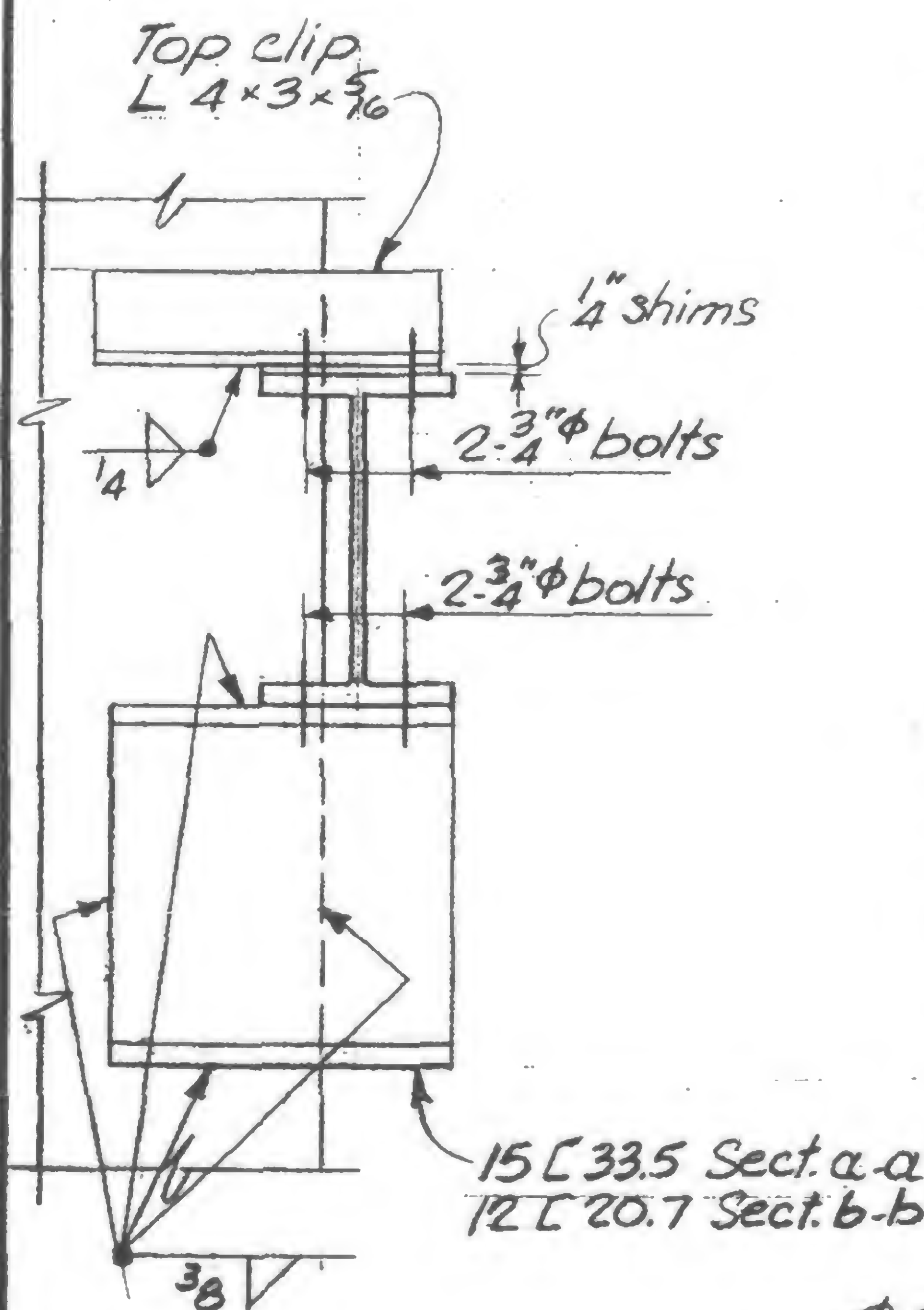
Detail 1049 A



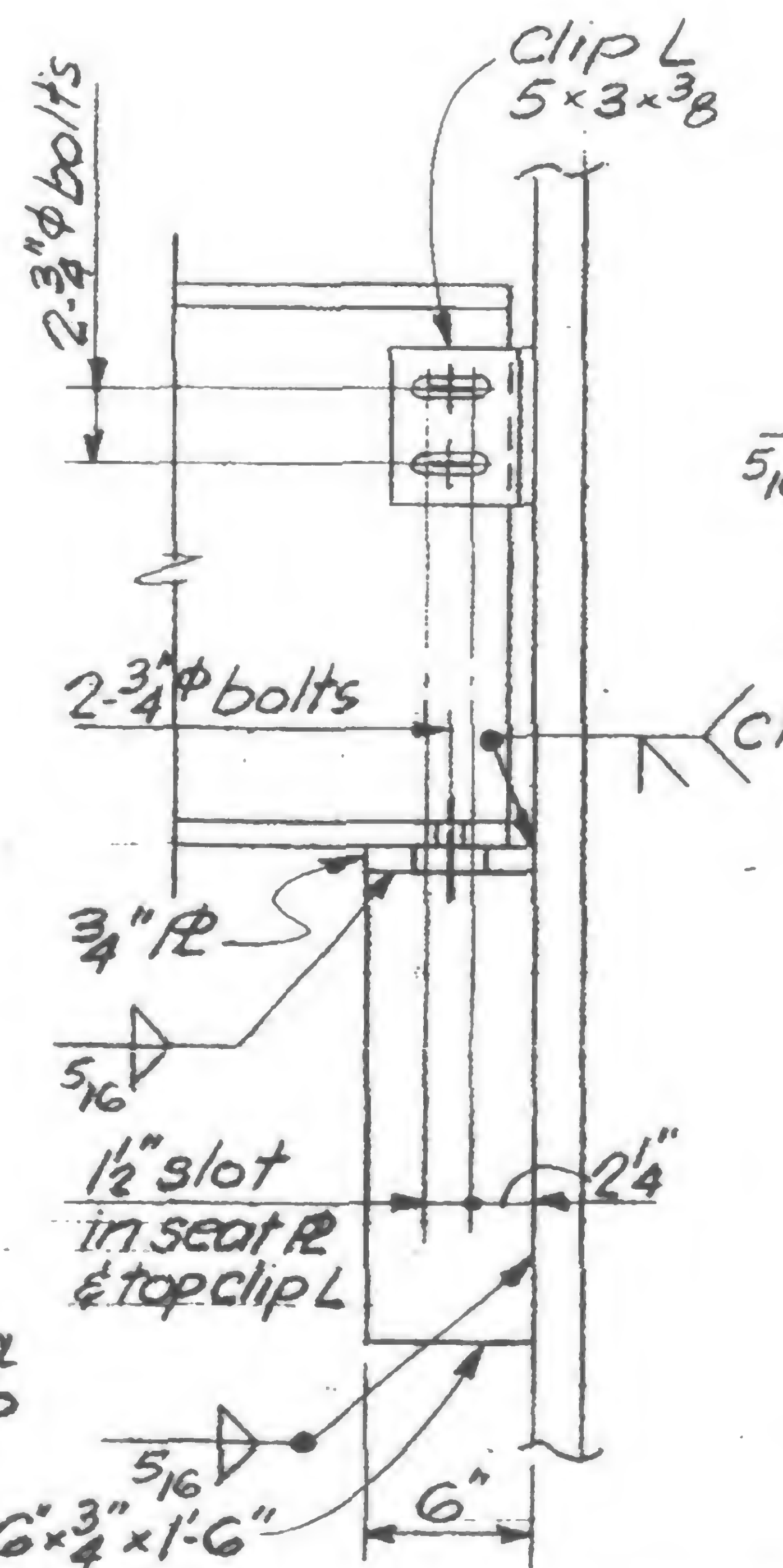
Detail 1049 B



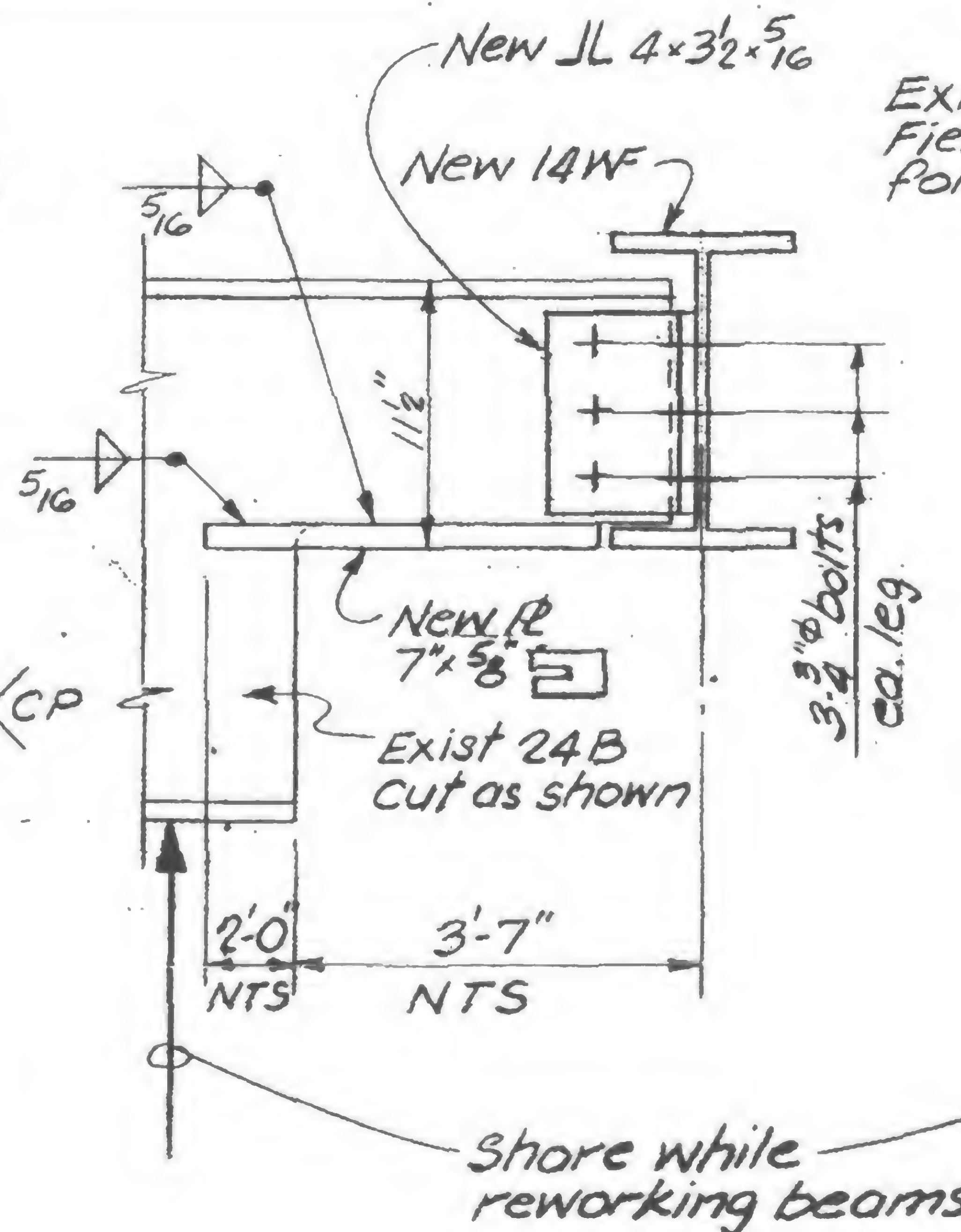
Detail 1049 C



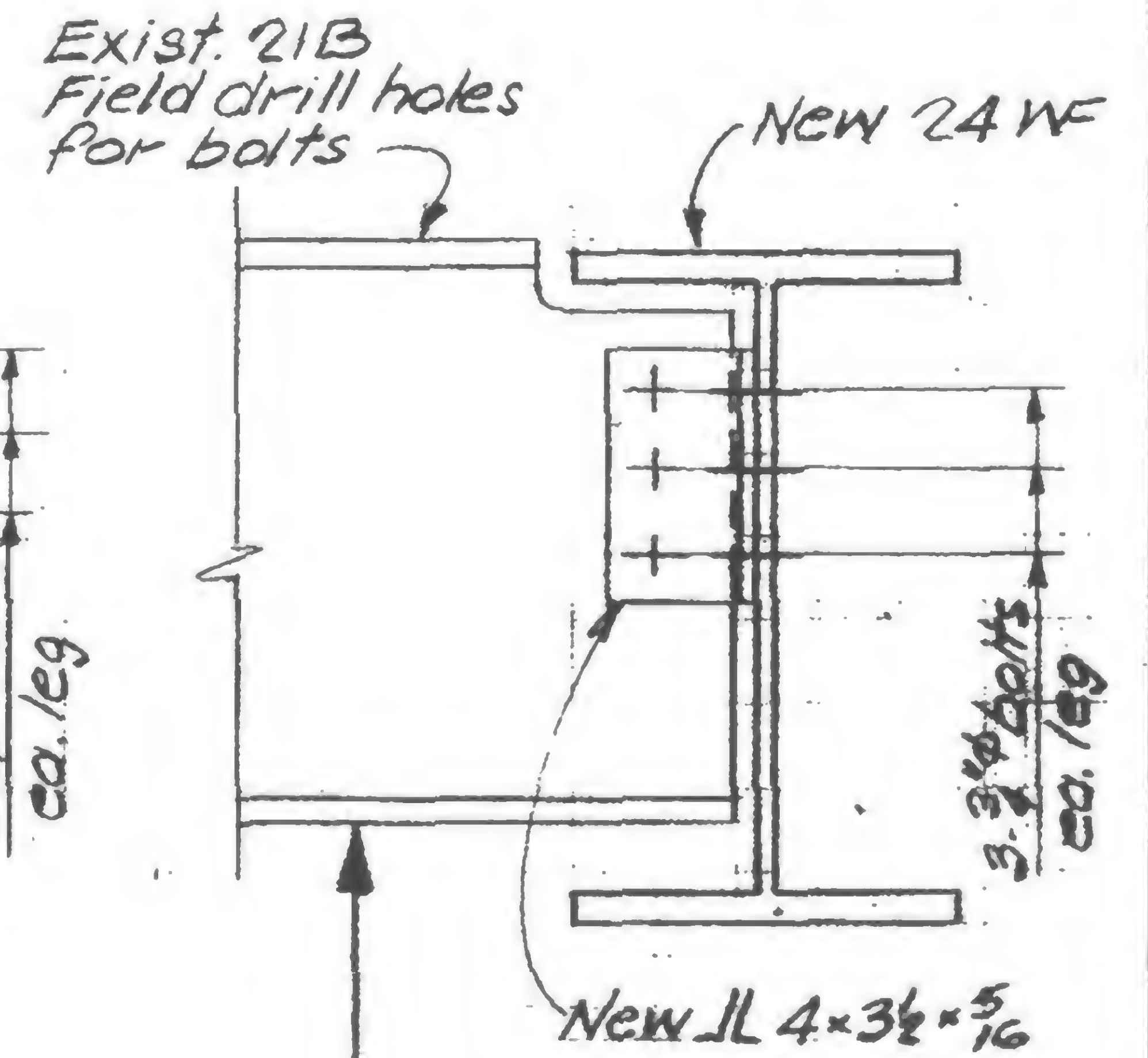
Section a-a



Section c-c



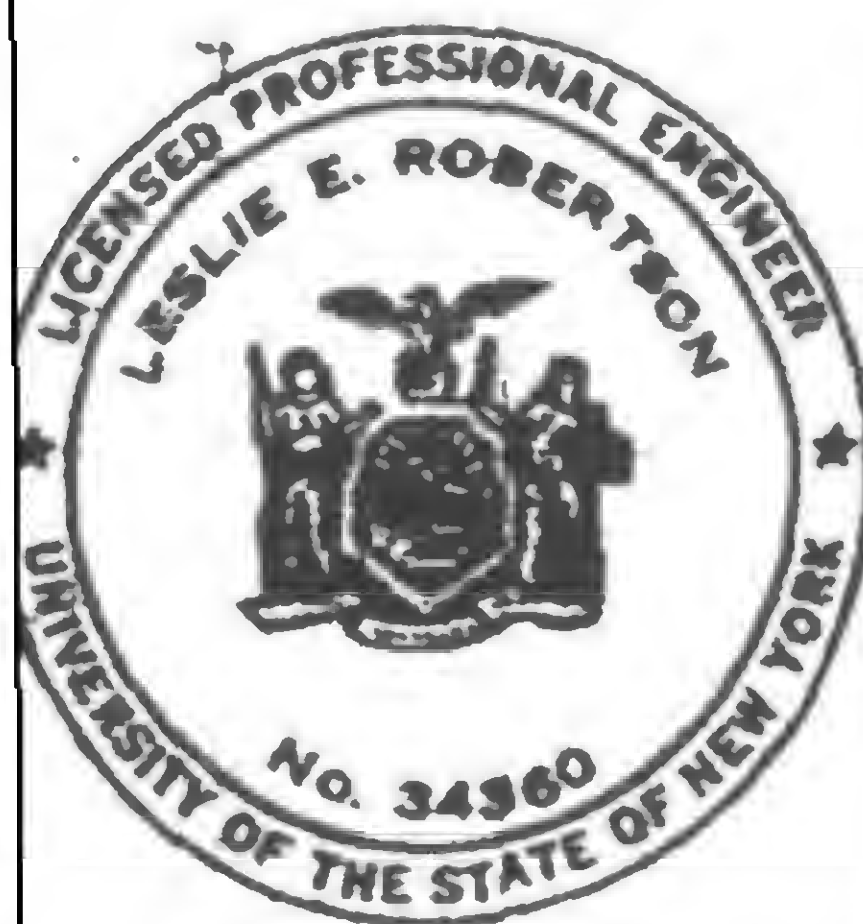
Detail 1049 D



Detail 1049 E

Section b-b opp. hand & as noted

19-K-1049



IGNED

DRAWN  
SC

REVIEWED

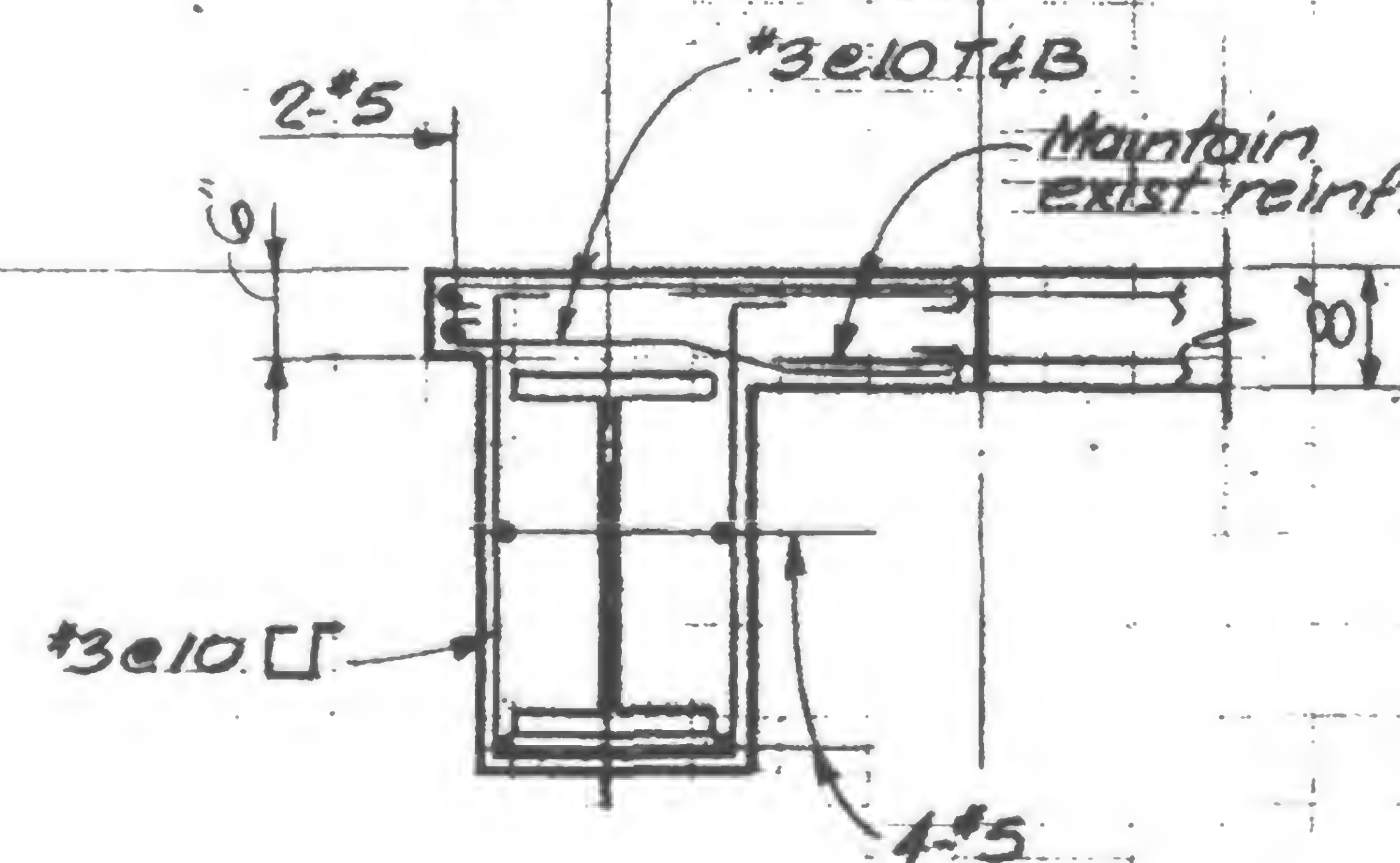
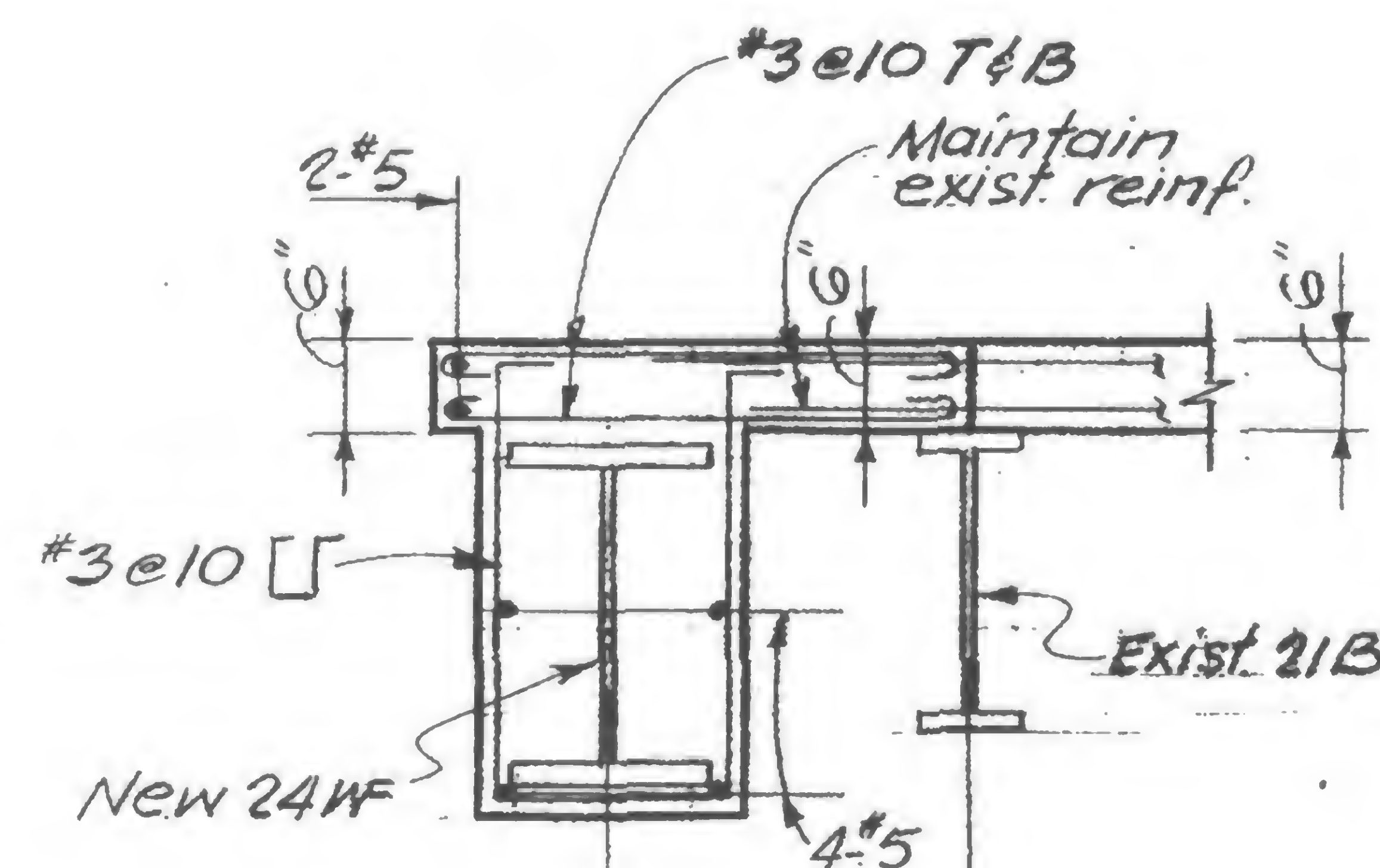
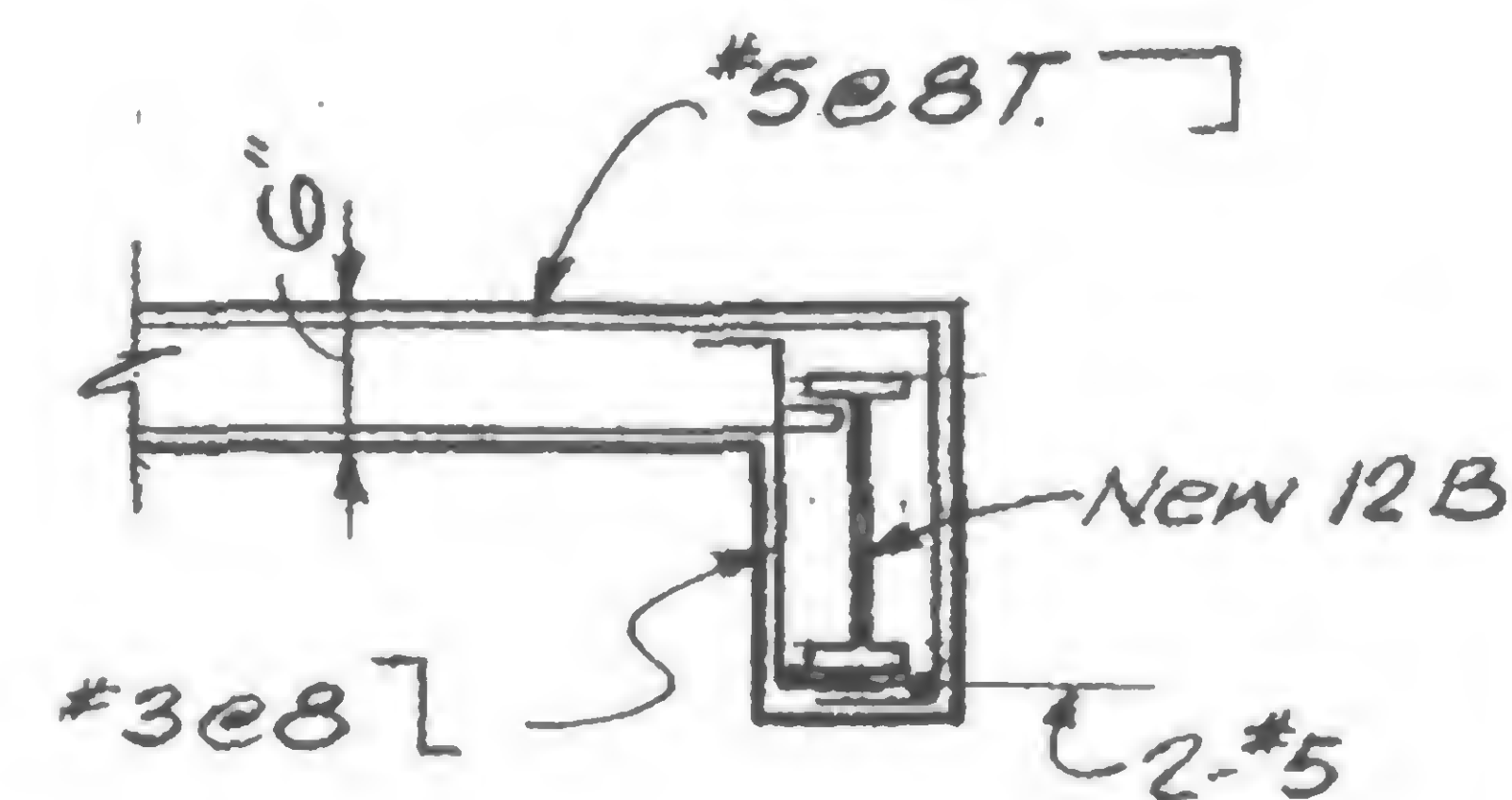
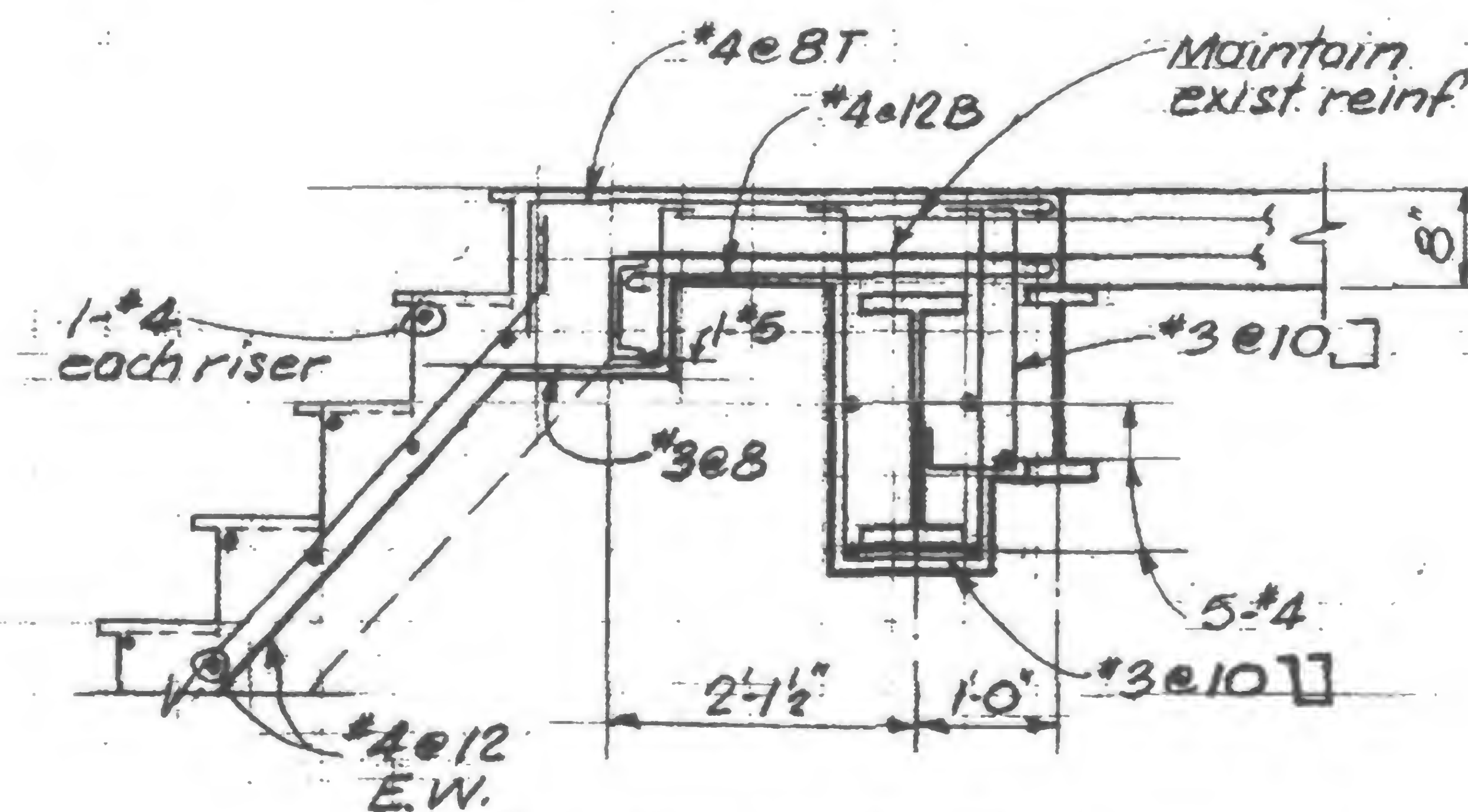
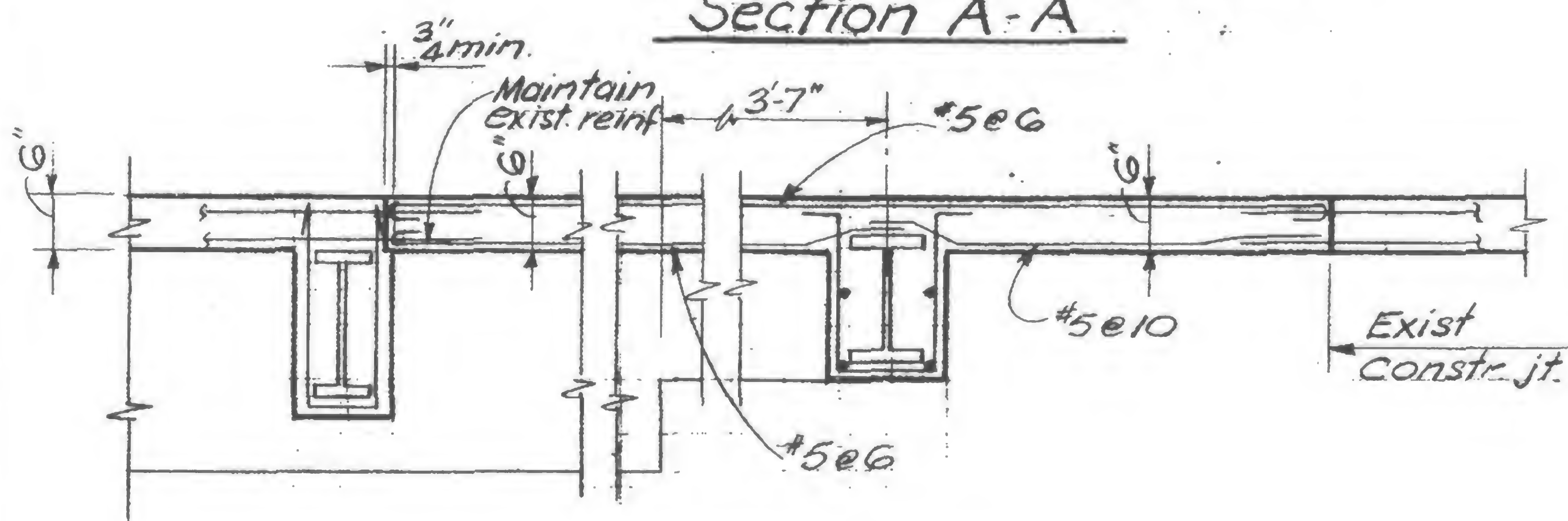
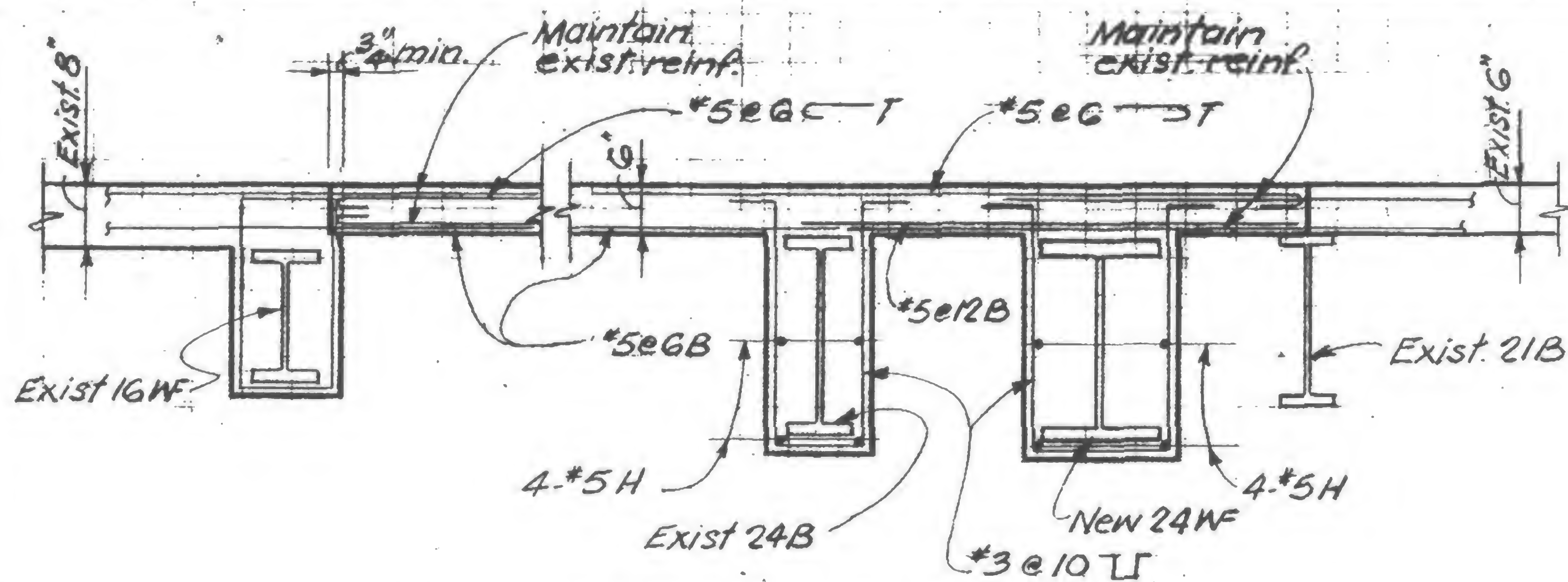


PROJECT THE WORLD TRADE CENTER

TITLE SECTIONS - EL 310 STAIR #4

DATE 10-29-71

## REVISIONS



DESIGNED

DRAWN  
S.C.

REVIEWED

19-K-1050



PROJECT

THE WORLD TRADE CENTER

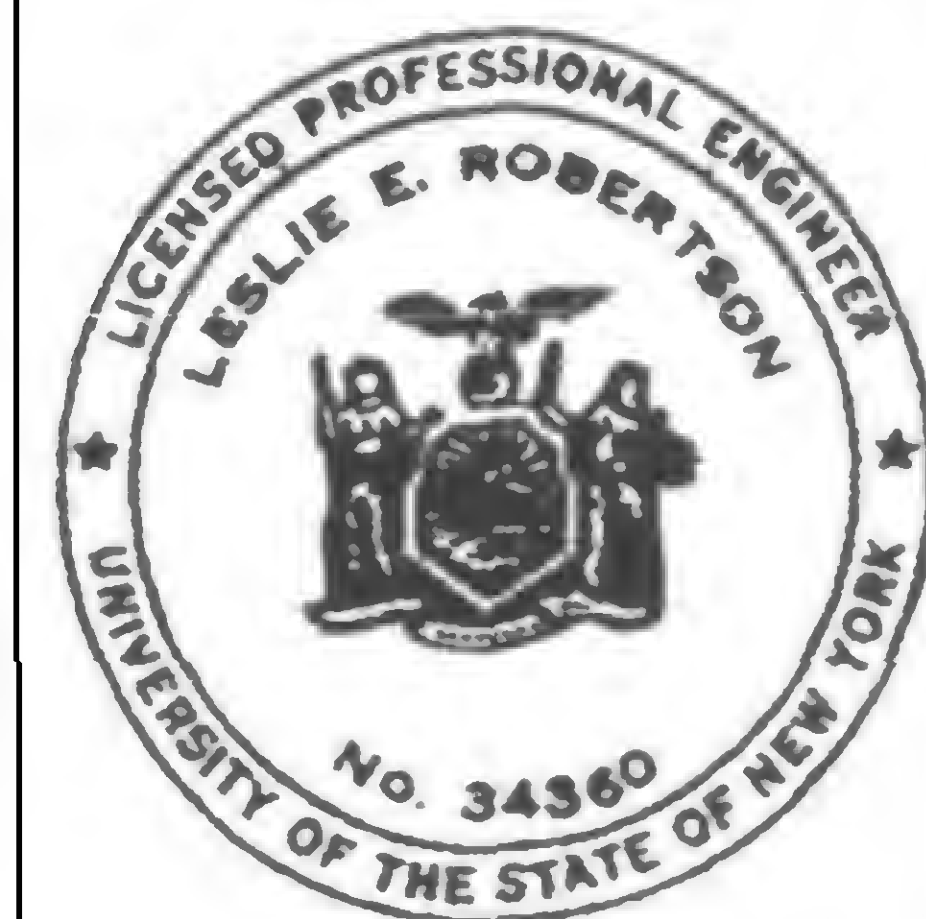
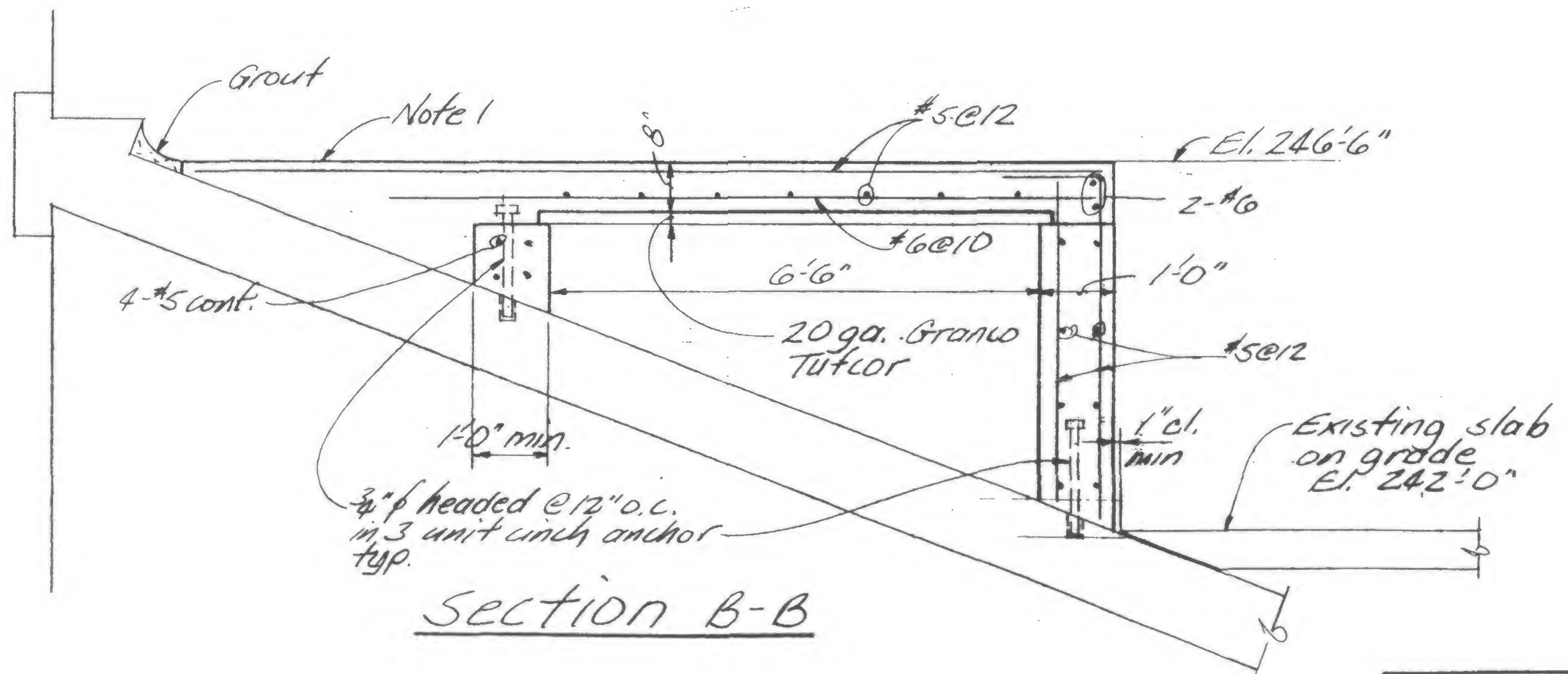
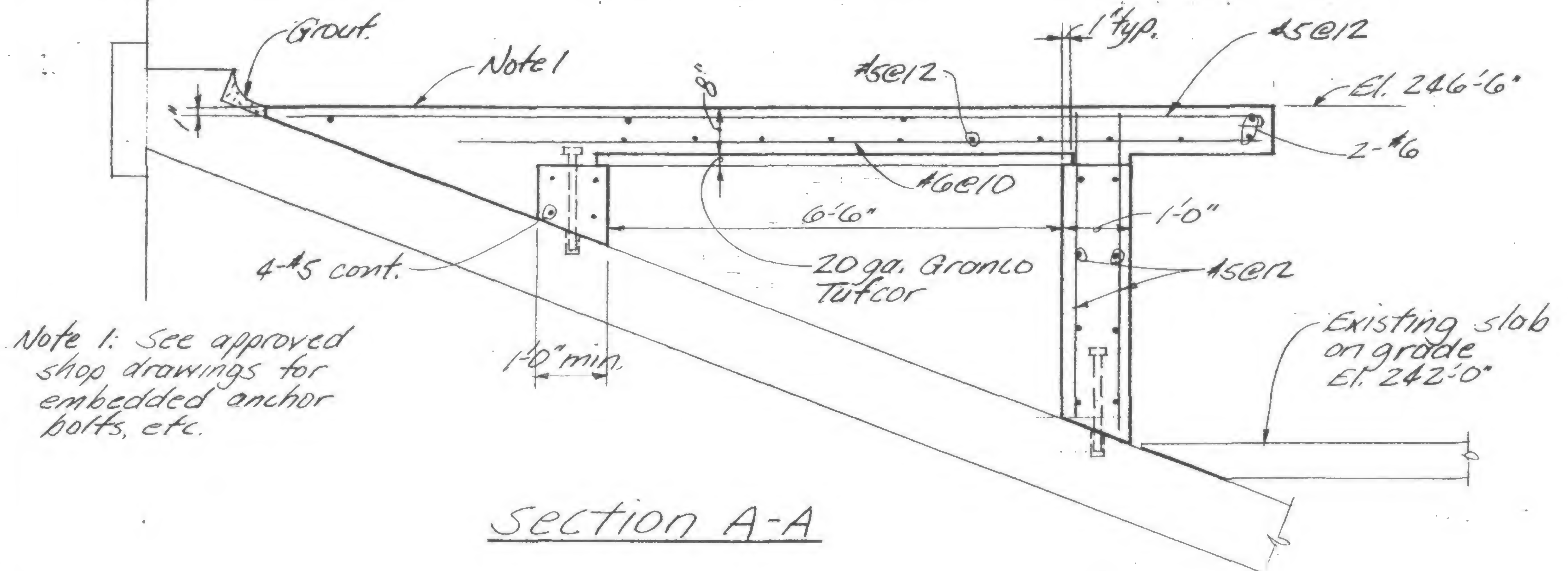
TITLE

EMERGENCY GENERATOR PLATFORM-EL 246'-6" JSE/KI

DATE

12-2-71

## REVISIONS



DESIGNED

DRAWN

REVIEWED

19-JK-1051.1



PROJECT

THE WORLD TRADE CENTER

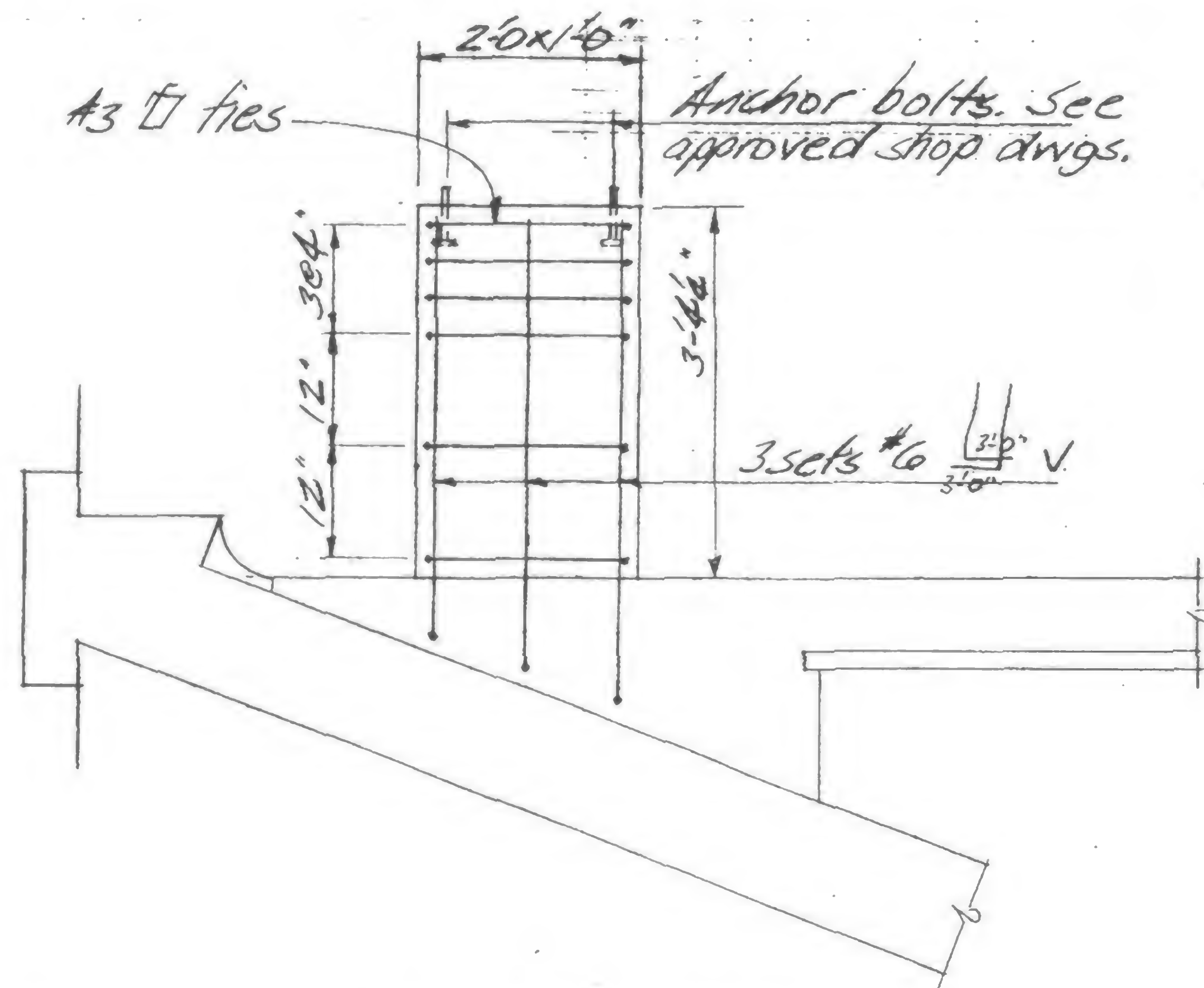
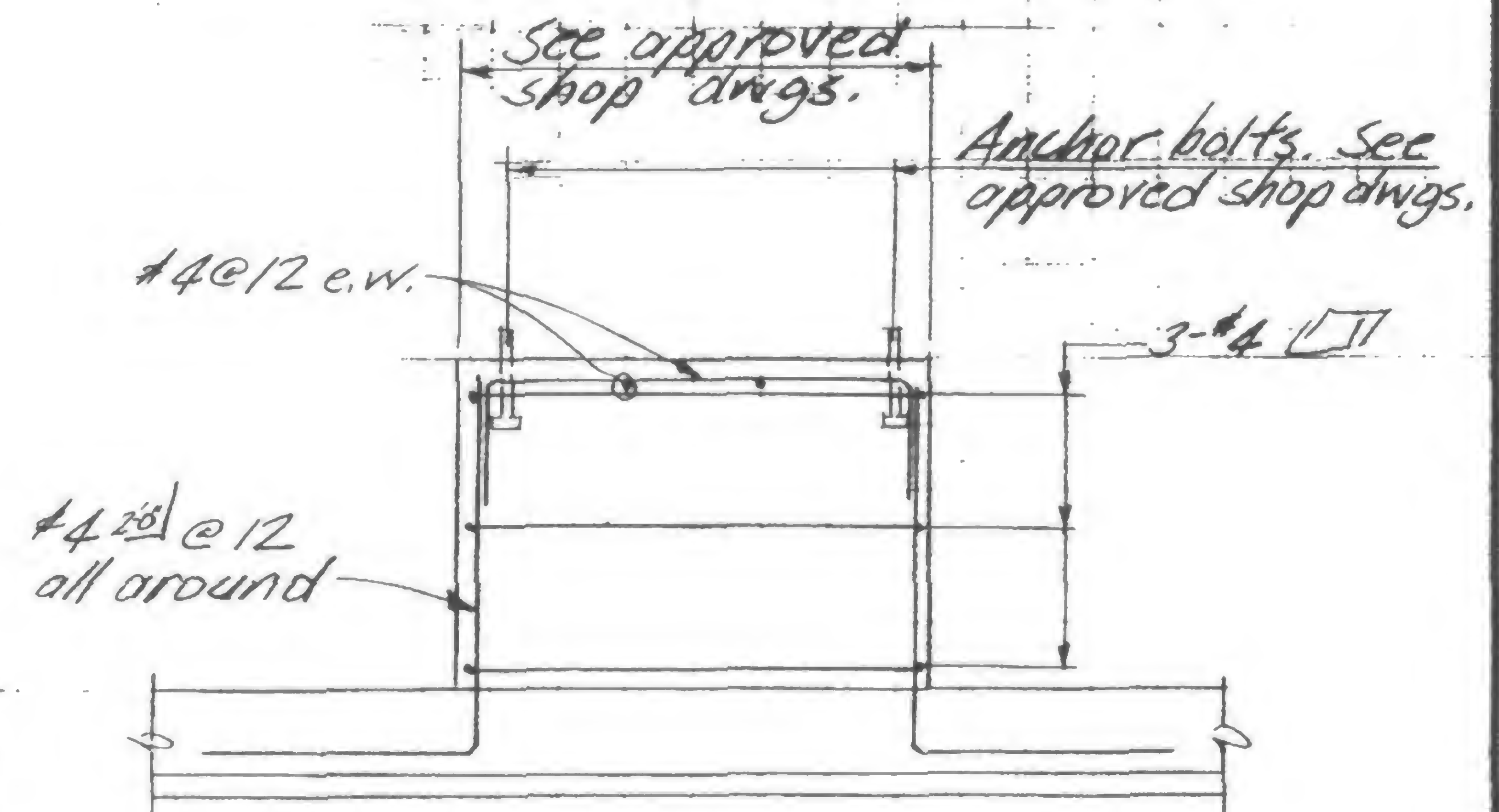
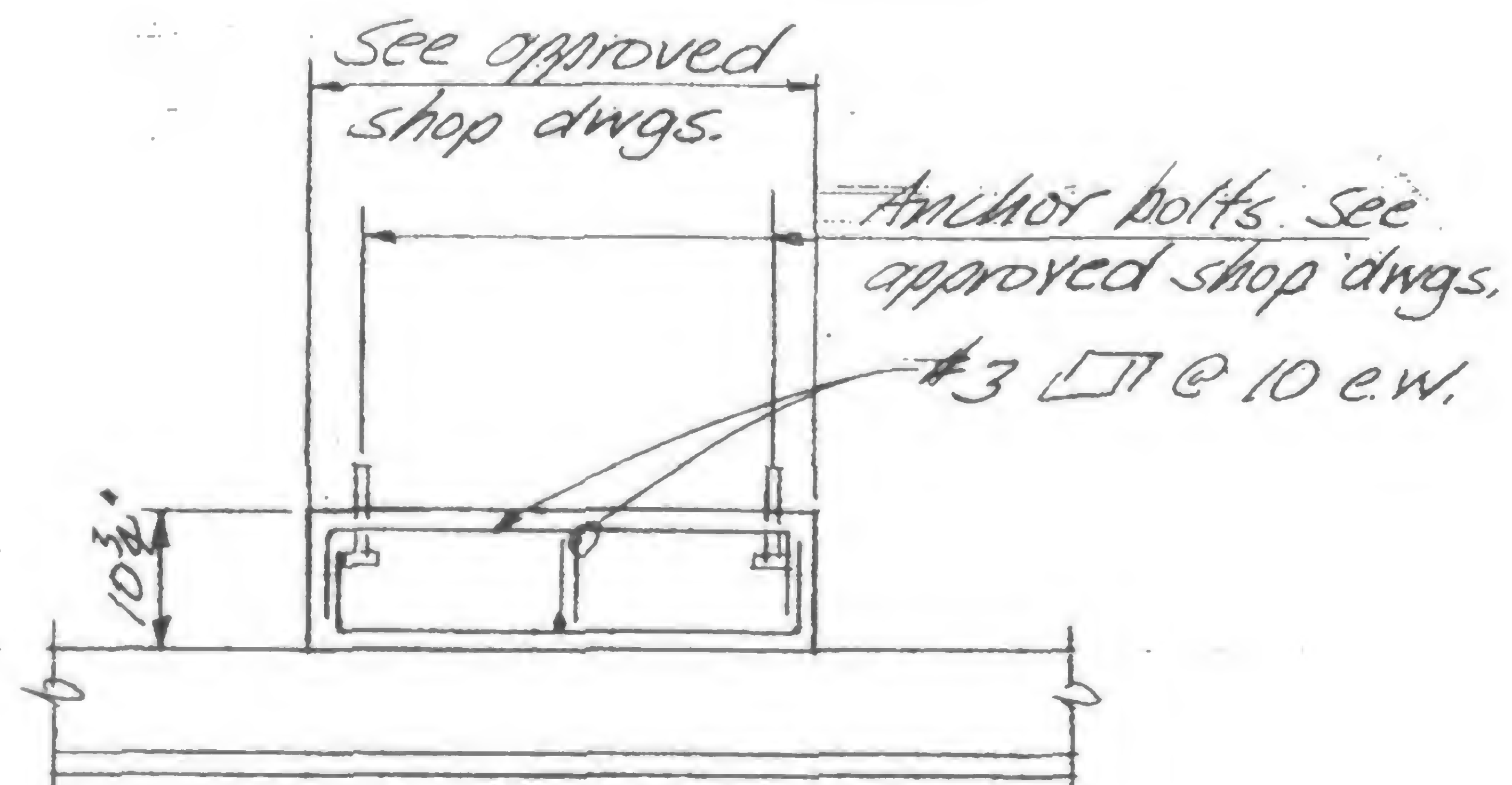
TITLE

EMERGENCY GENERATOR PLATFORM - EL 246.6 JS/KY

DATE

12-2-71

REVISIONS

Section C-CSection D-DSection E-E

DESIGNED

DRAWN

REVIEWED

19-JK-1051.2



PROJECT

THE WORLD TRADE CENTER

TITLE

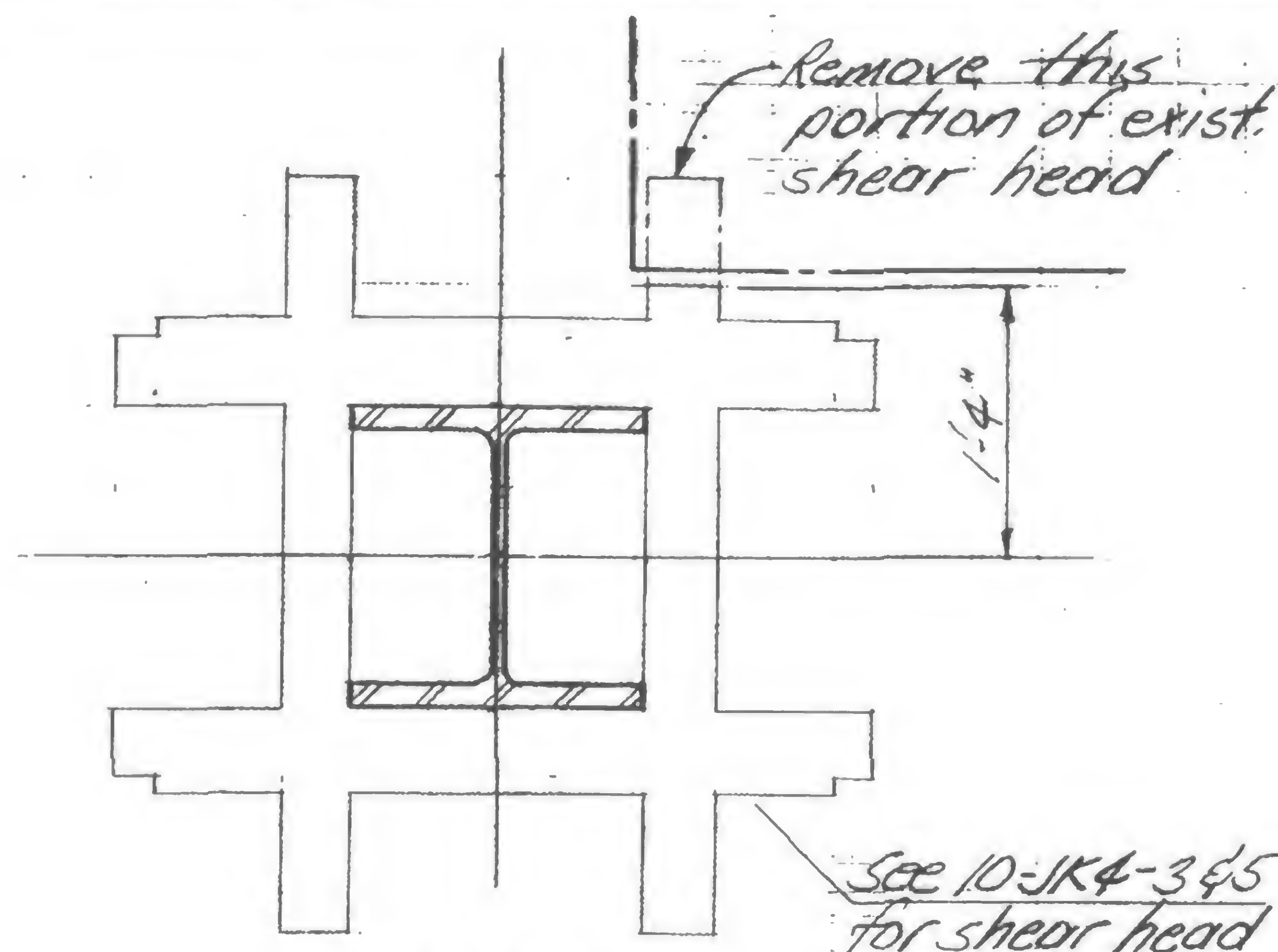
DETAIL FOR SHEAR HEAD REPAIR

DATE

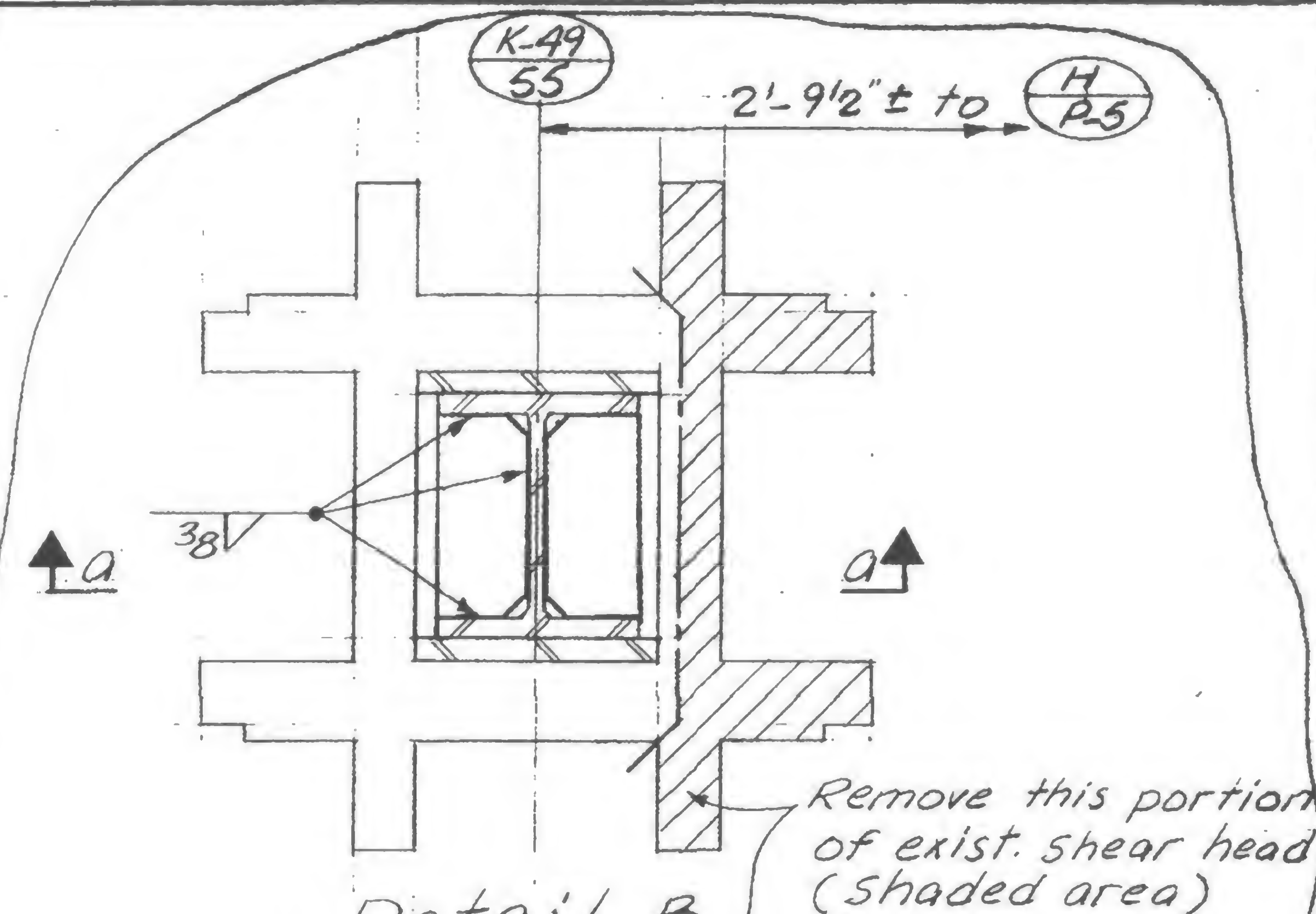
12-23-71

## REVISIONS

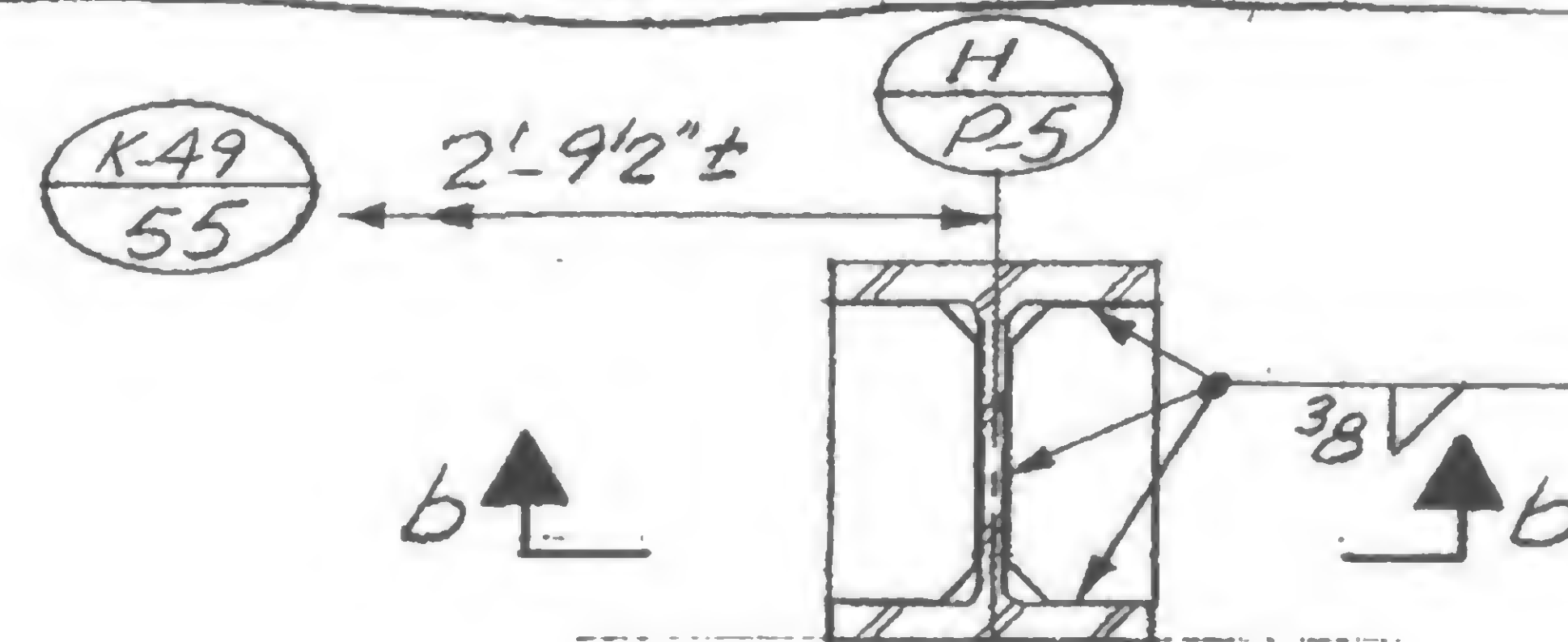
3-10-72



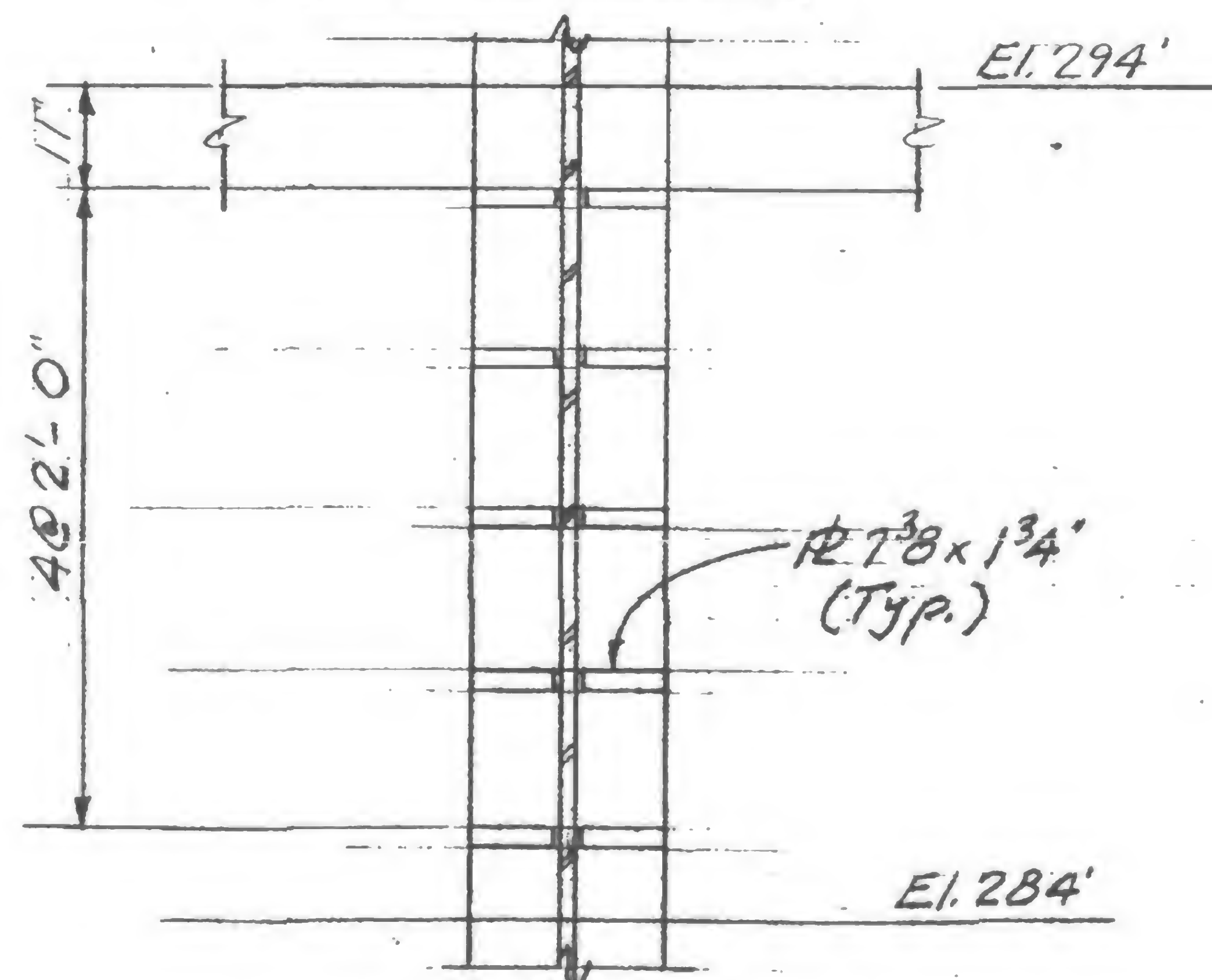
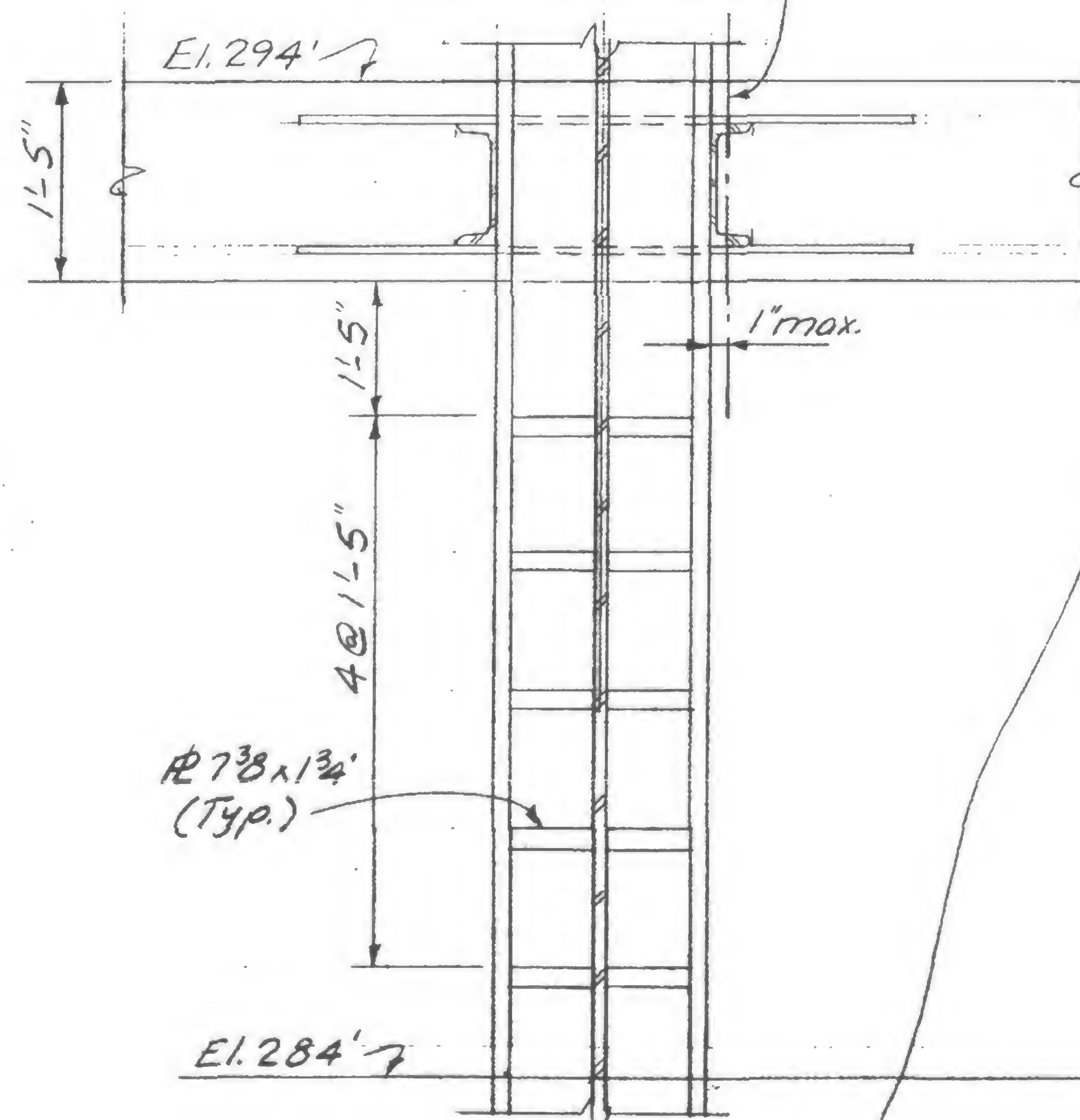
Detail A



Detail B



Detail C

Section b-b  
(Not to scale)Section a-a  
(Not to scale)

19-K-1052.1

DESIGNED  
K. ChiangDRAWN  
J.A. & A.F.REVIEWED  
WAB







PROJECT

THE WORLD TRADE CENTER

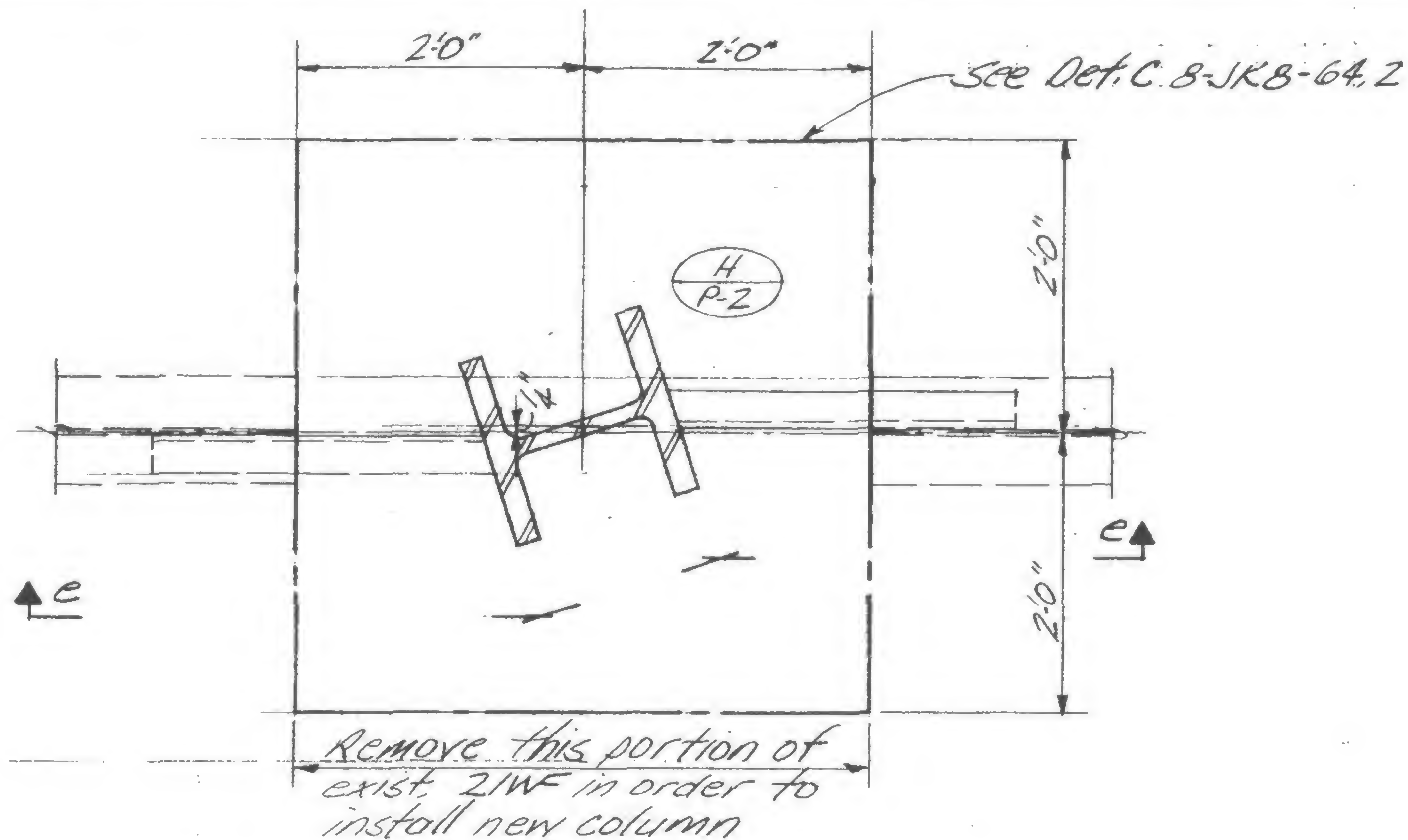
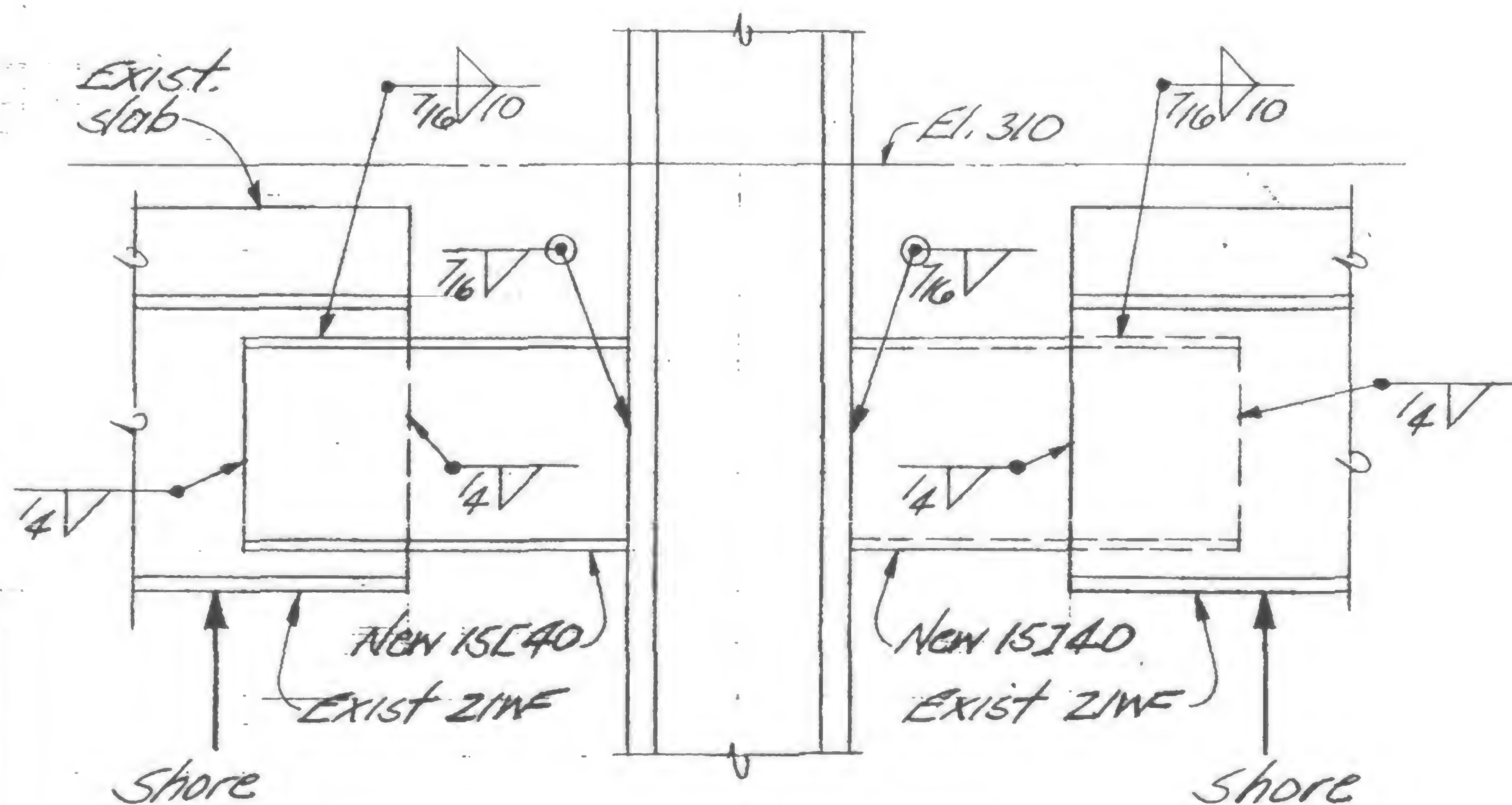
TITLE

BEAM REPAIR AT EL. 310

DATE

12/23/71

## REVISIONS

PlanSection e-e  
Detail E

19-K-1052.2



DESIGNED

K. Chiang

DRAWN

REVIEWED



PROJECT

THE WORLD TRADE CENTER

TITLE

REINFORCING PLATES OF EXISTING COLUMNS

DATE

12-23-71

## REVISIONS

Col. K35-5 &amp; K35-6 - North Face

Col. K35-5 &amp; K35-6 - South Face

Remove exist.  
splice R

El. 310

Exist beam

At both  
ends  $\frac{1}{2}$  18 $\frac{1}{2}$  3-12 $\frac{1}{2}$ 

El. 294

At both  
ends  $\frac{1}{2}$  18 $\frac{1}{2}$  3-12

Exist splice R

El. 284

New R 15g x 14 1/2

New R 15g x 14 1/2

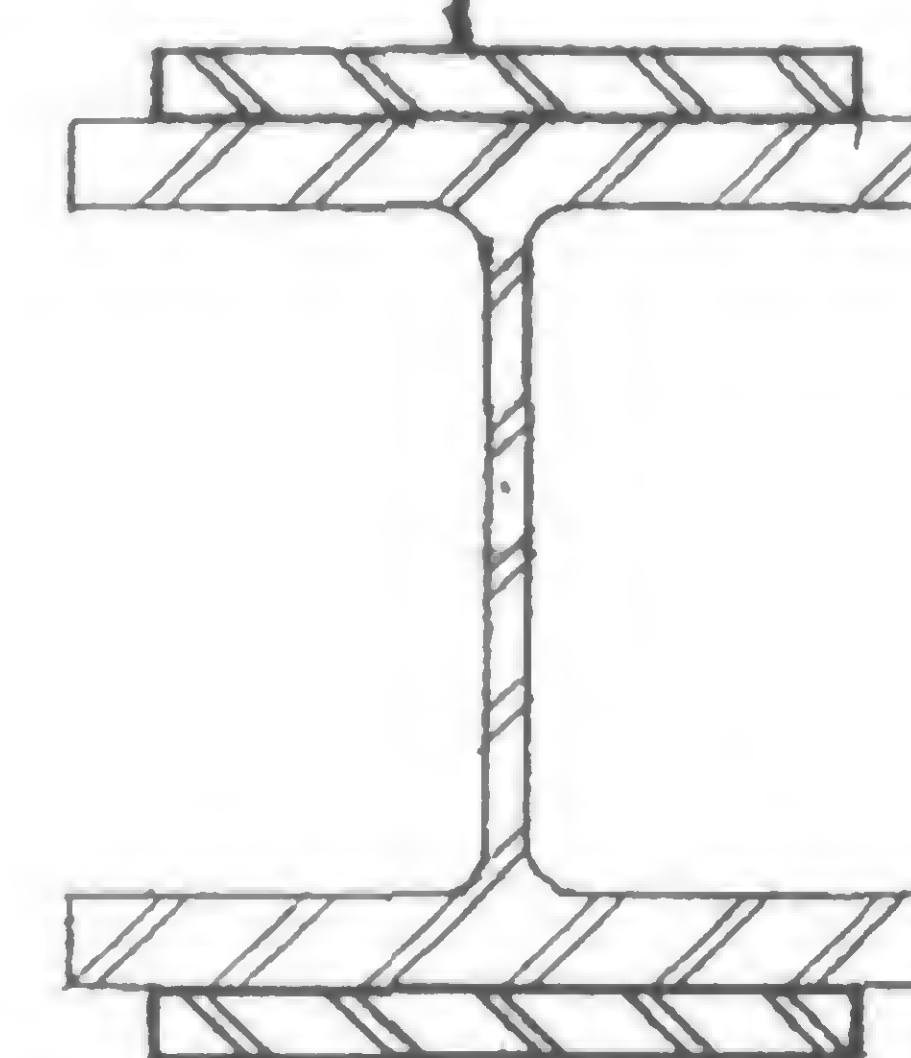
Remove exist  
splice RCol. K35-6  $\frac{1}{2}$  36Col. K35-5  $\frac{1}{2}$  18Col. K35-6  $\frac{1}{2}$ Col. K35-6  
Notch R for  
exist. beam $\frac{1}{2}$  3-12 $\frac{1}{2}$ Notch Rs for  
installation of new  
shear head. See  
19-K-1055At both  
ends  $\frac{1}{2}$  18 $\frac{1}{2}$  3-12

Exist splice R

New R 15g x 14 1/2

New R 15g x 14 1/2

New R

Typical Column Section

## Notes:

1. All new cover plates to be Fy36.
2. Field measurement is required to establish the length of all new cover plates.



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K. Chiang

DRAWN

REVIEWED

19-K-1053.1



PROJECT

THE WORLD TRADE CENTER

TITLE

REINFORCING PLATES OF EXISTING COLUMNS

DATE

12-23-71

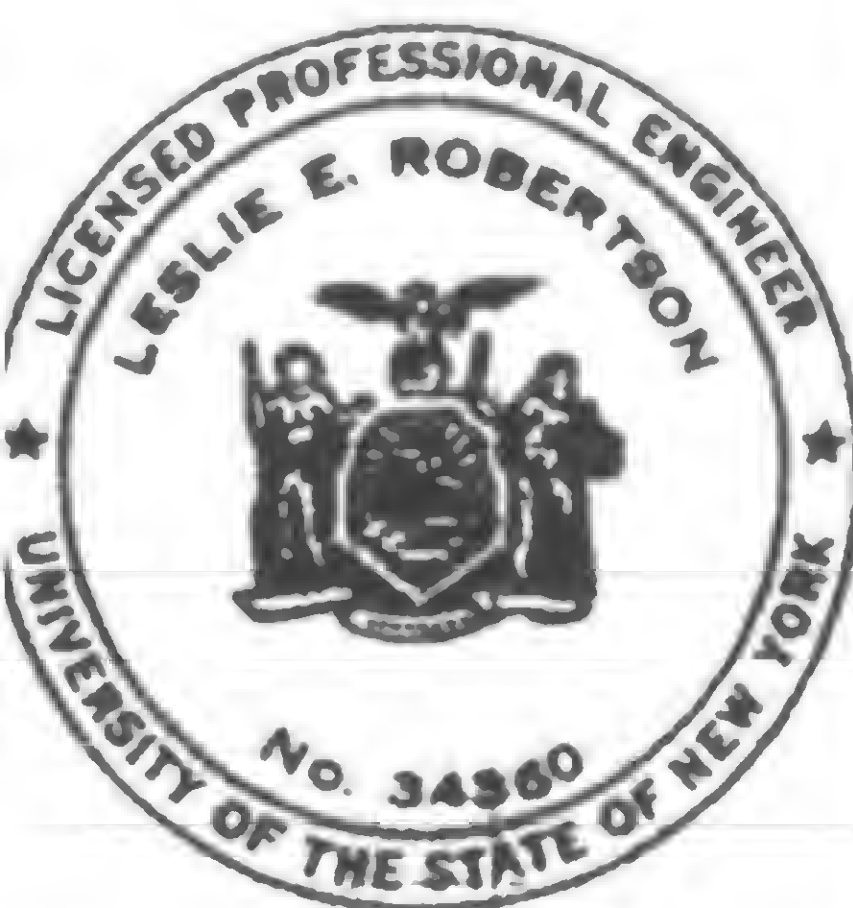
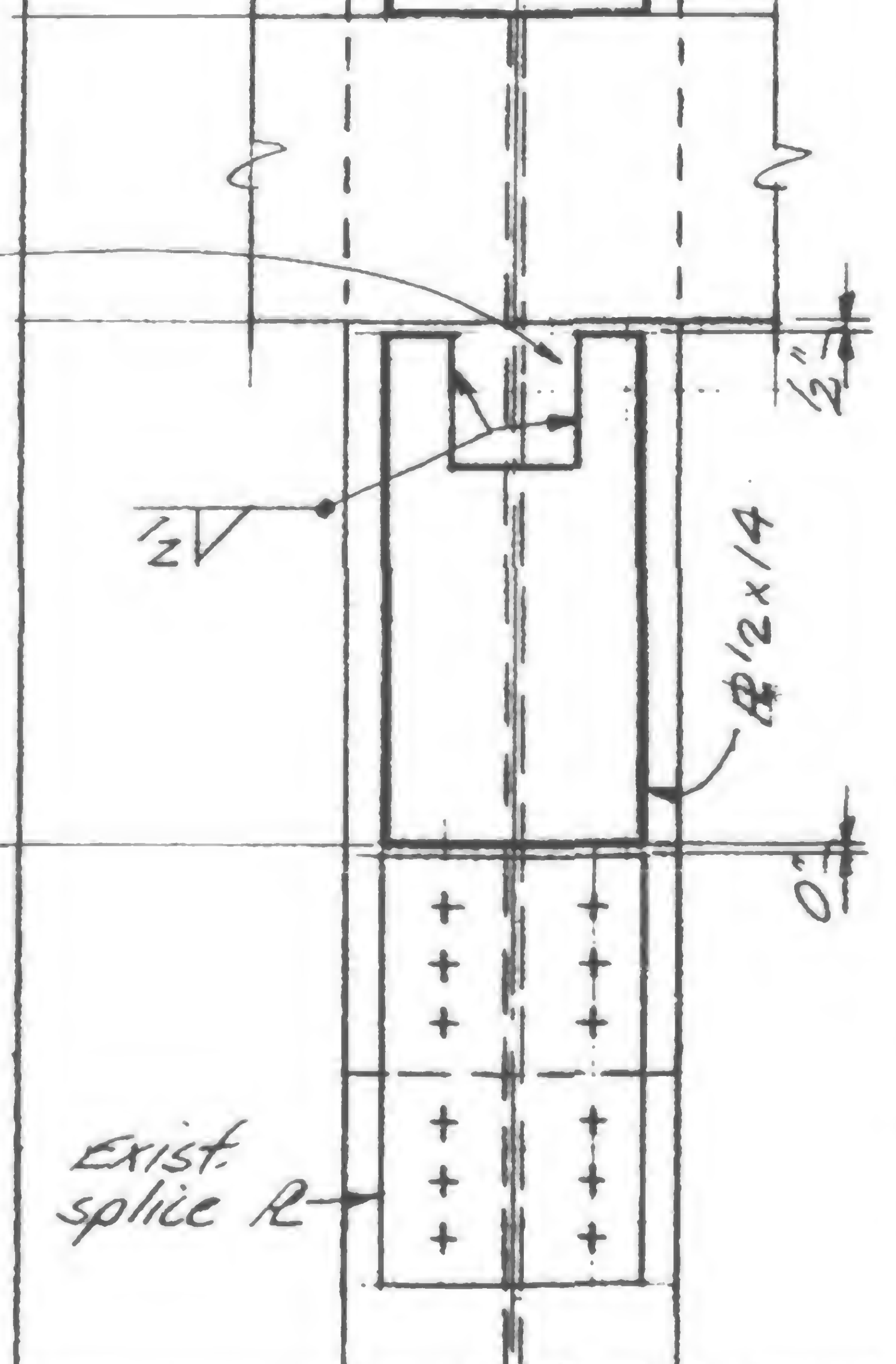
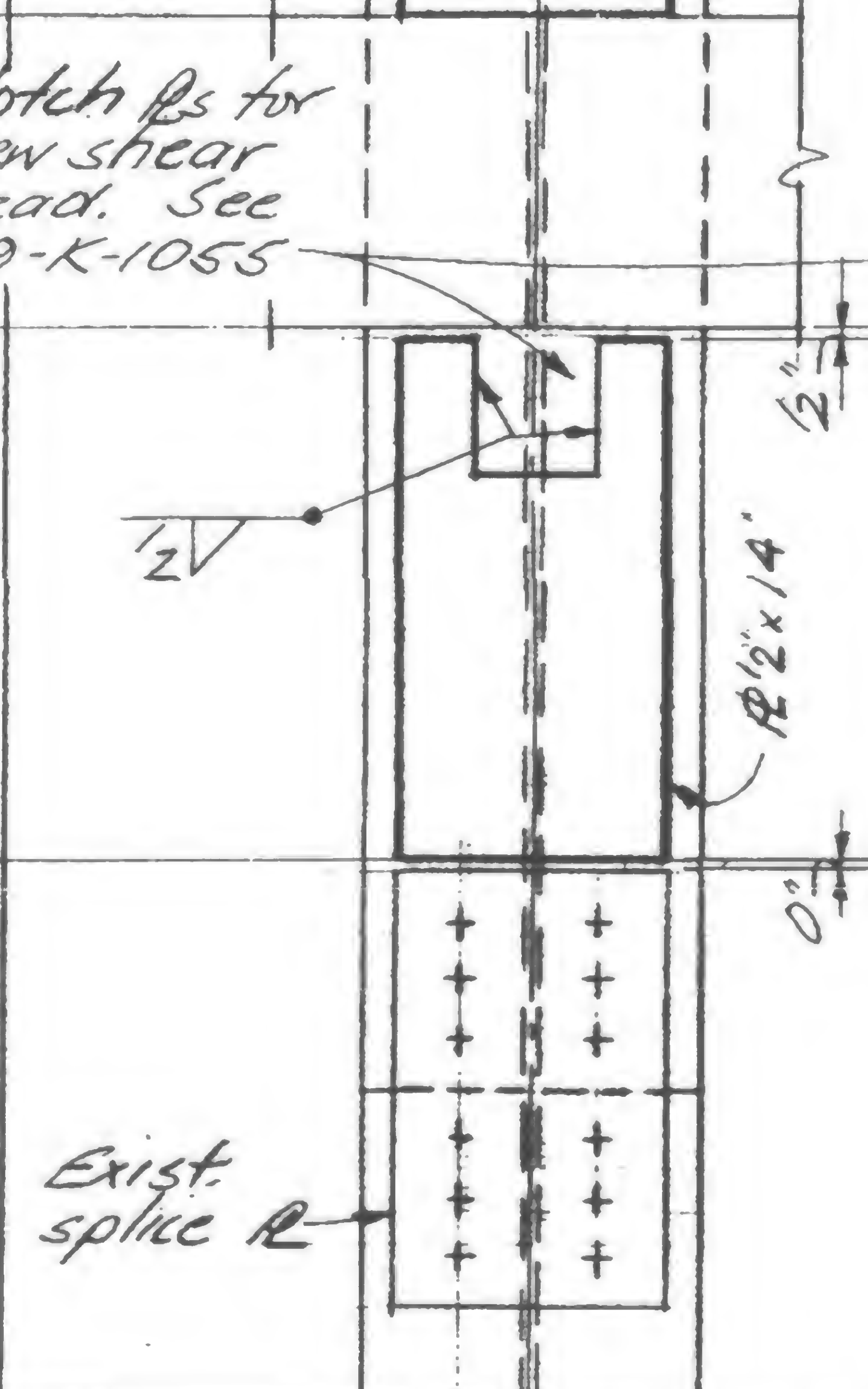
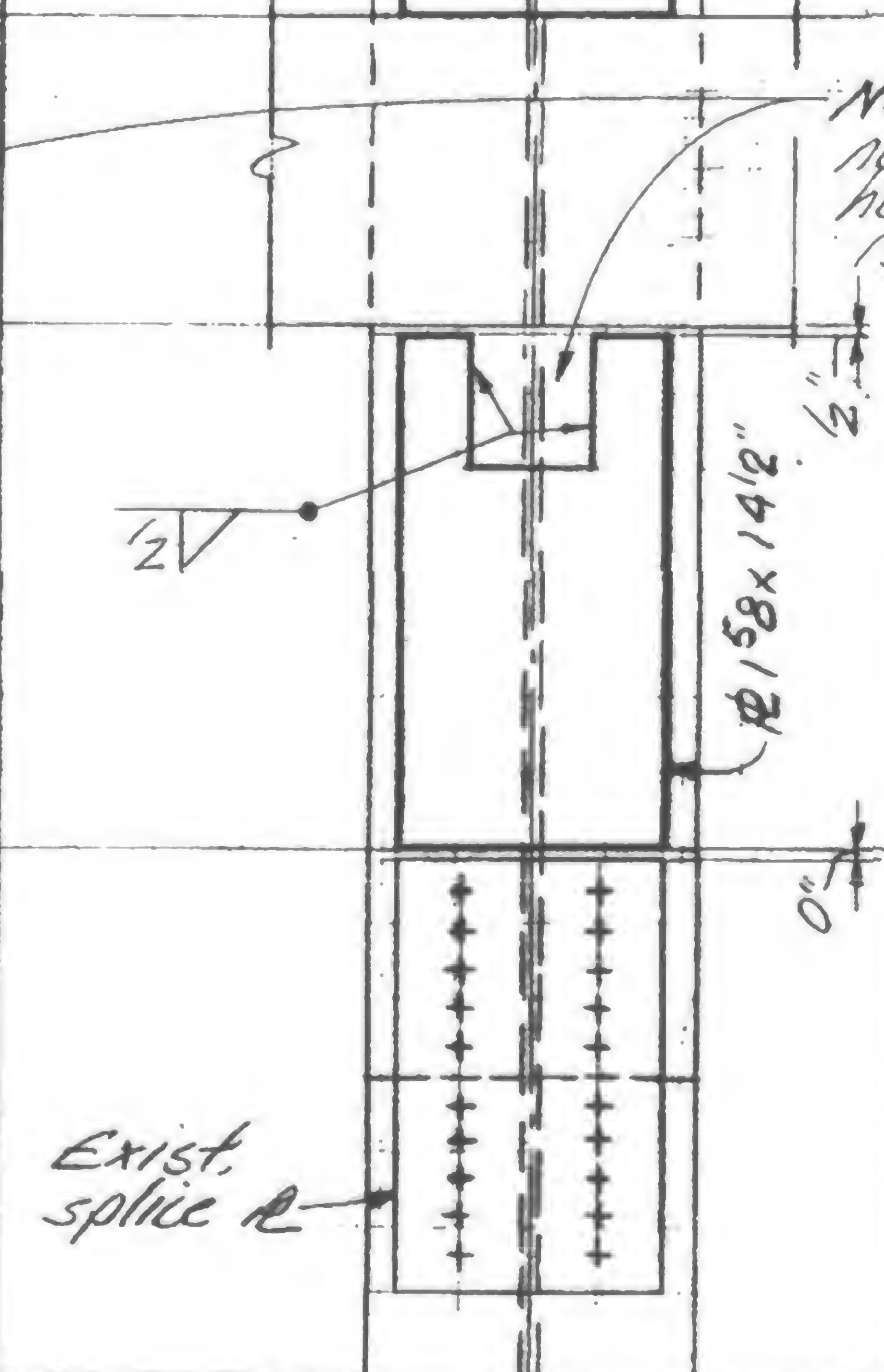
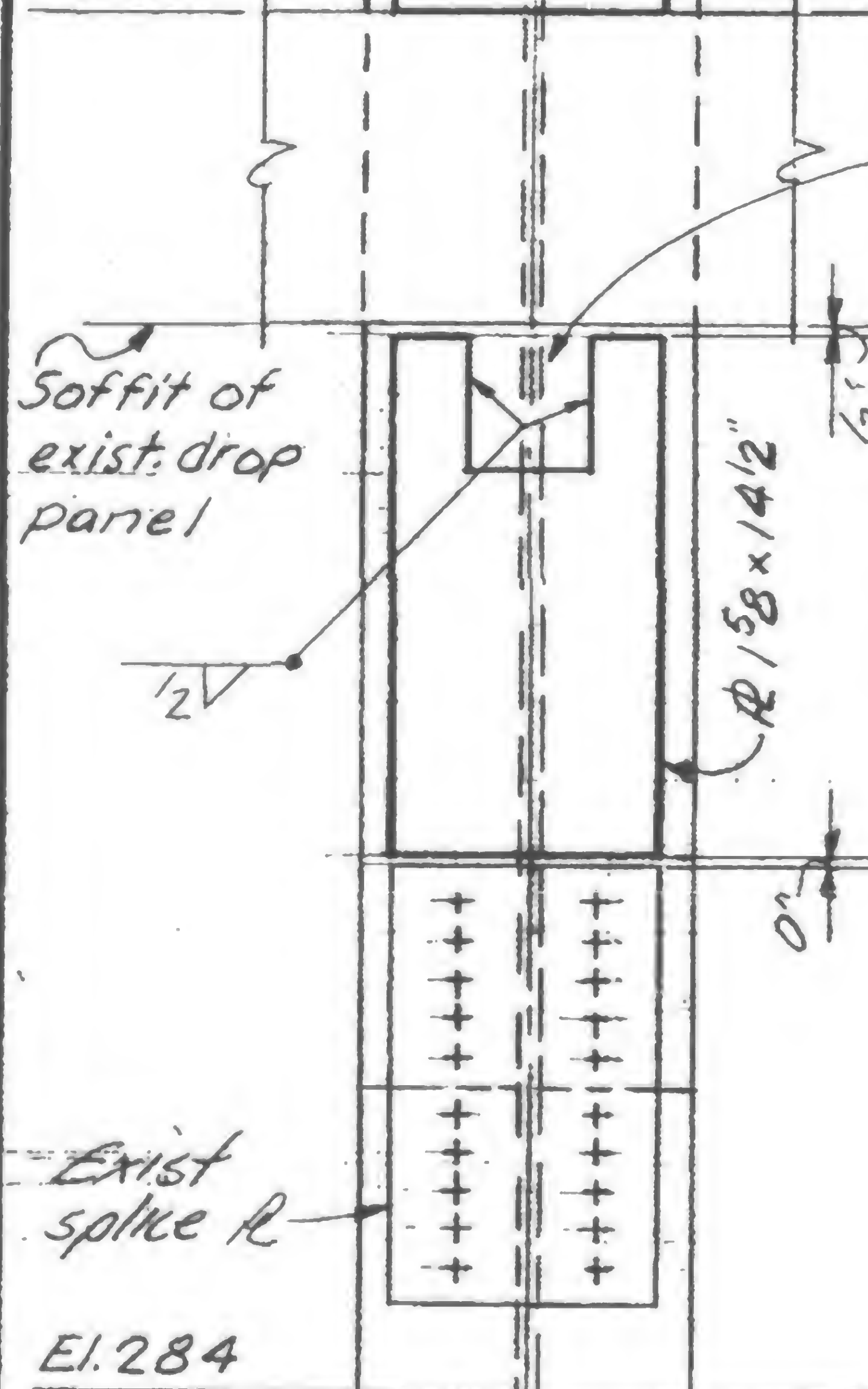
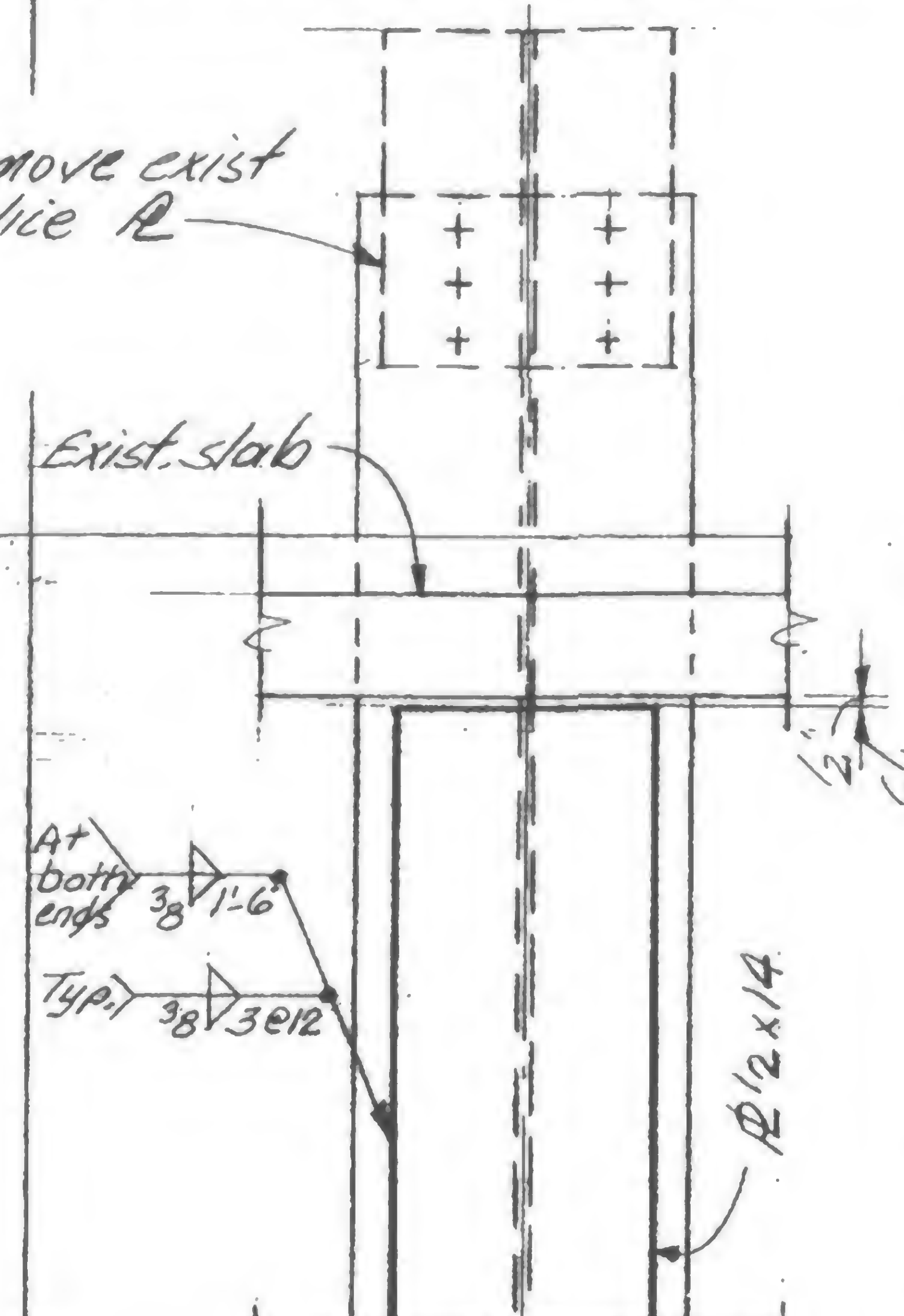
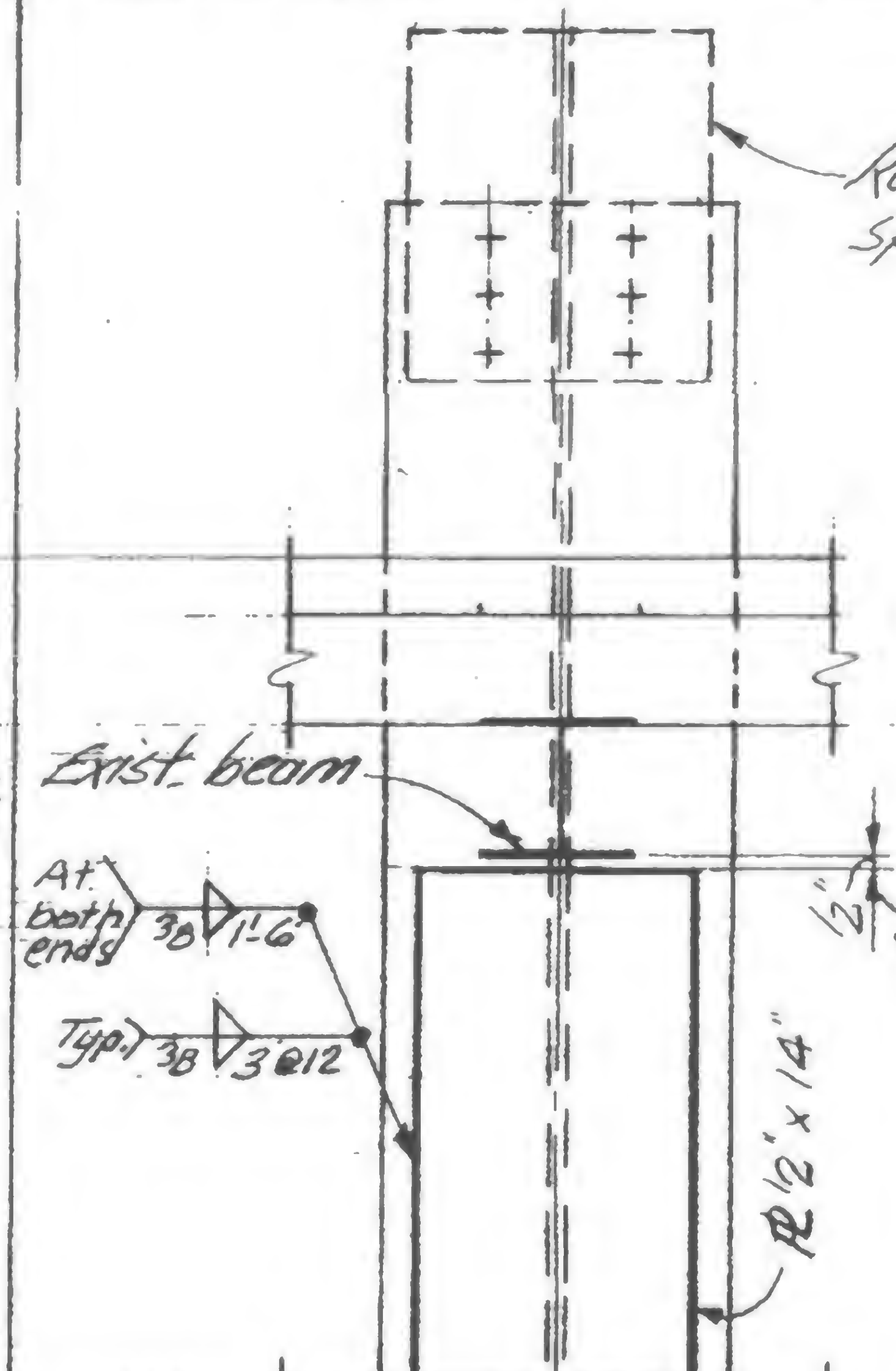
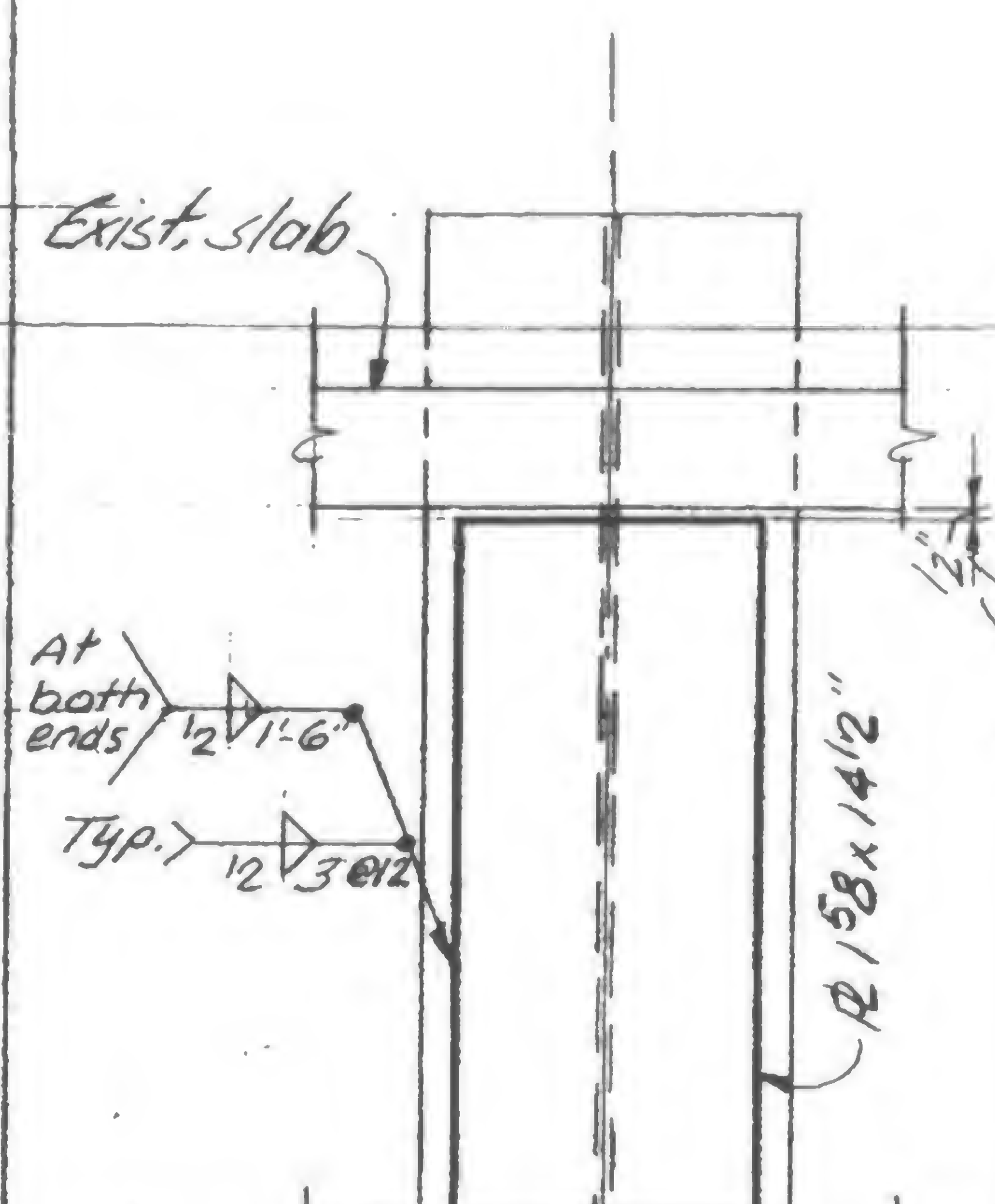
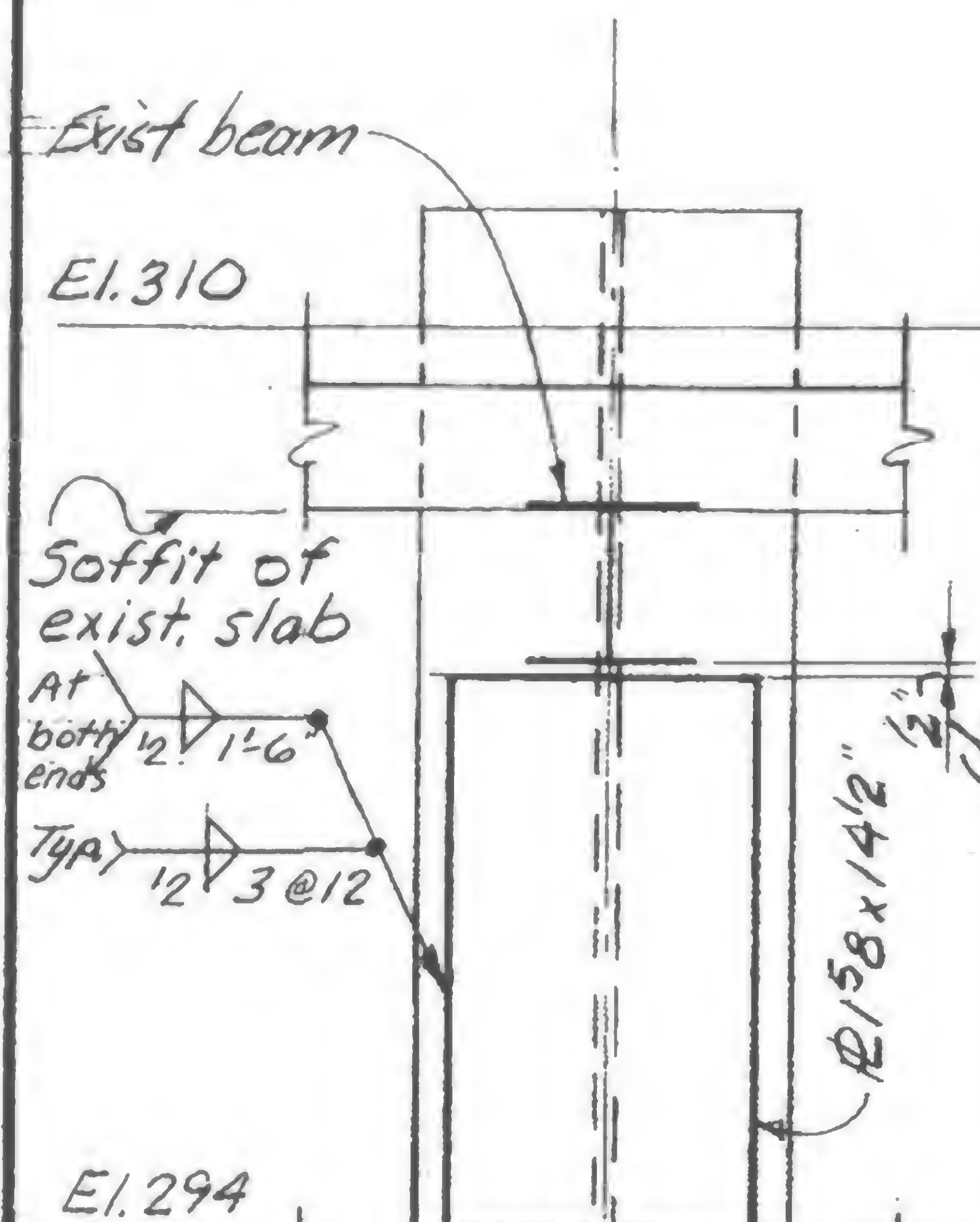
REVISIONS

Col. K31-G - North Face

Col. K31-G - South Face

Col. K35-4 - North Face

Col. K35-4 - South Face

DESIGNED  
Y. CHIANGDRAWN  
A. FRANQUIREVIEWED  
WAB

Note: See typical column section and notes in 19-K-1053.1

19-K-1053.2



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT

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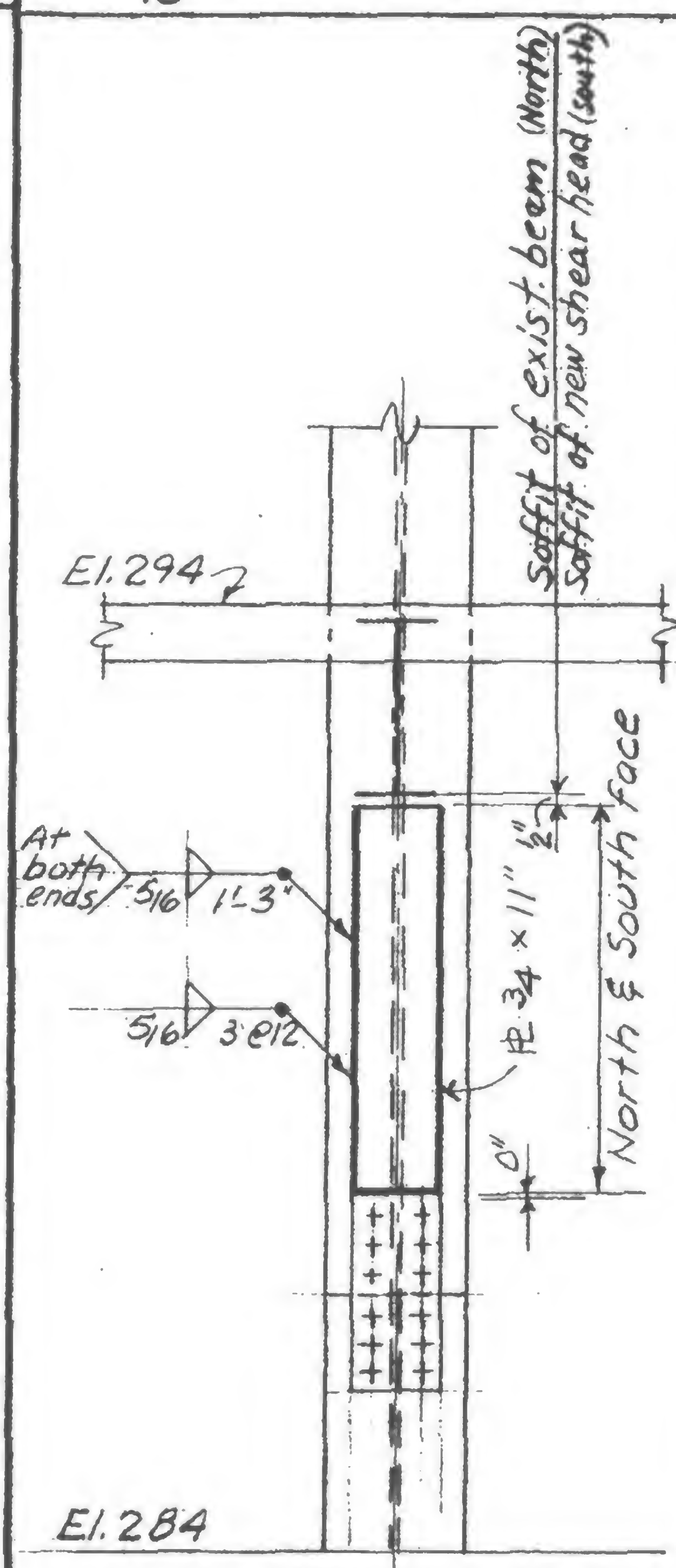
TITLE

REINFORCING PLATES OF EXISTING COLUMNS

DATE

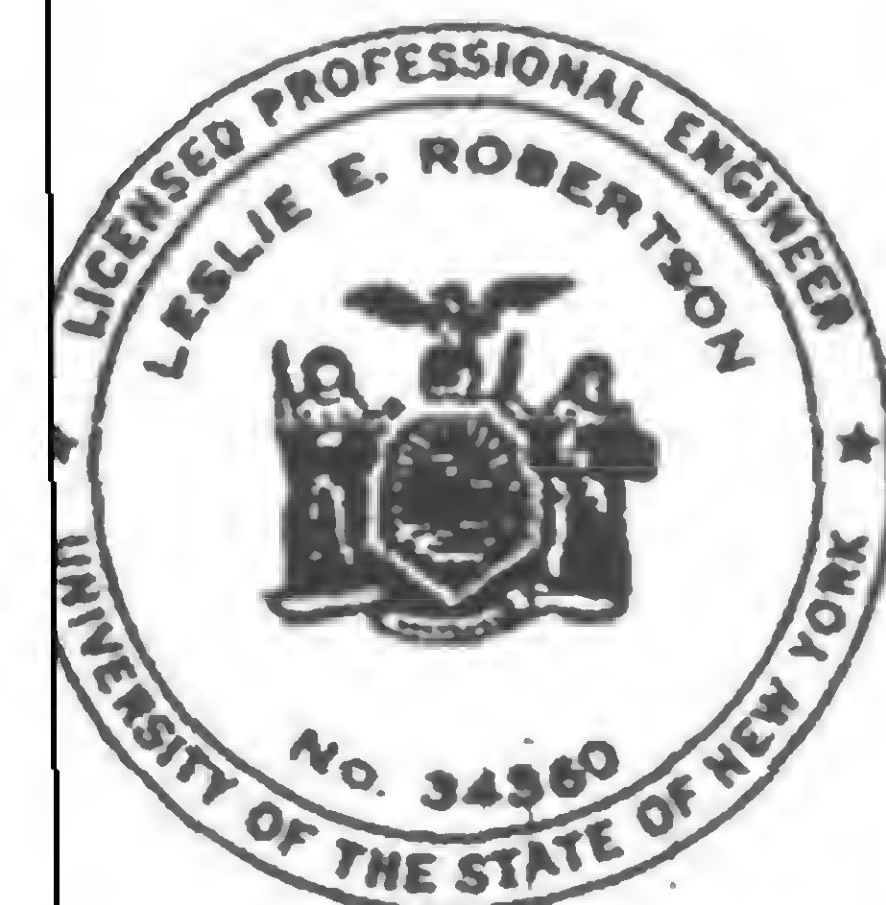
12-23-71

REVISIONS

Col. ~~K41~~  
10 North & South face

El. 284

See 19-K-1053.1  
for typ. section and  
notes.



DESIGNED

CHIANG

DRAWN

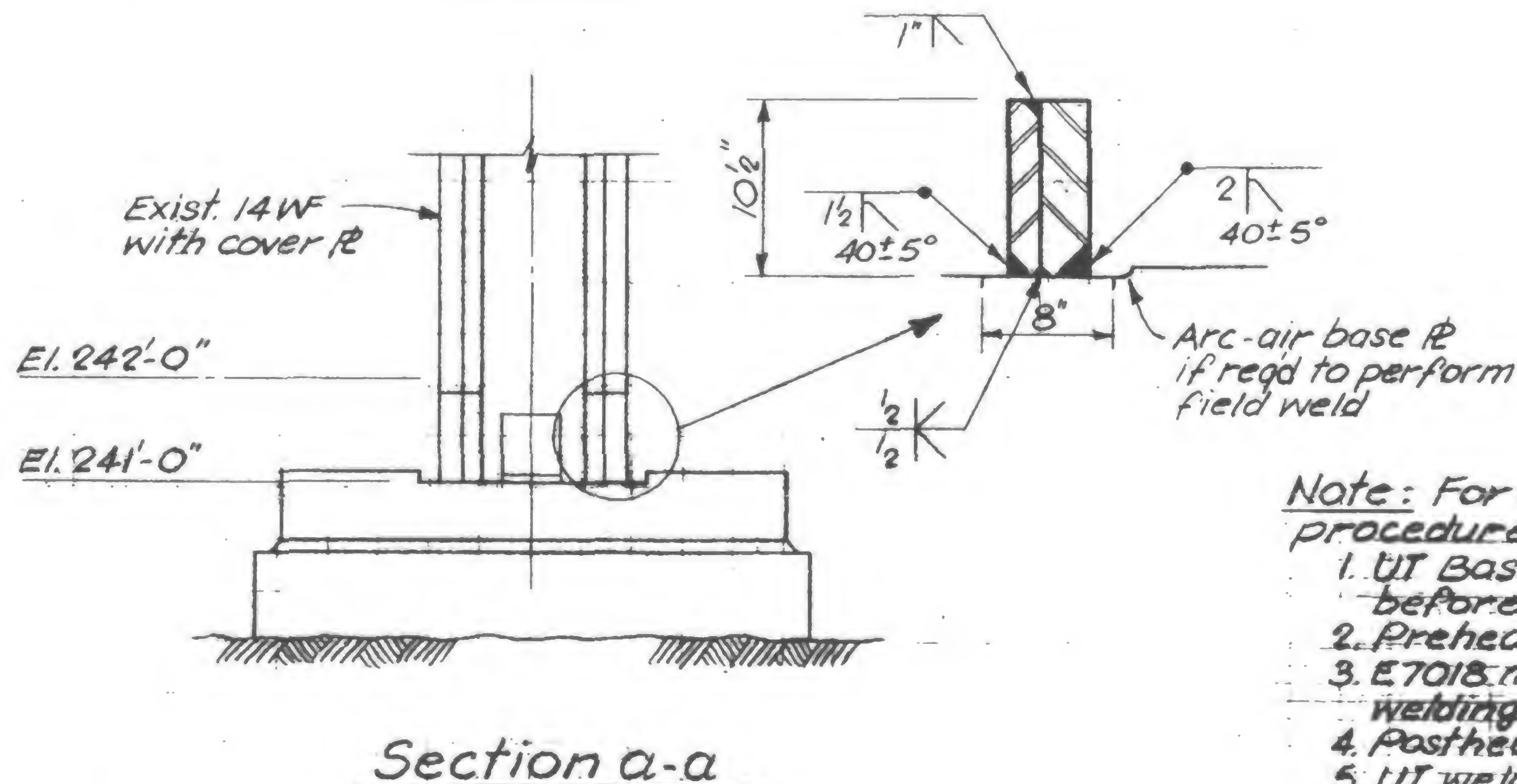
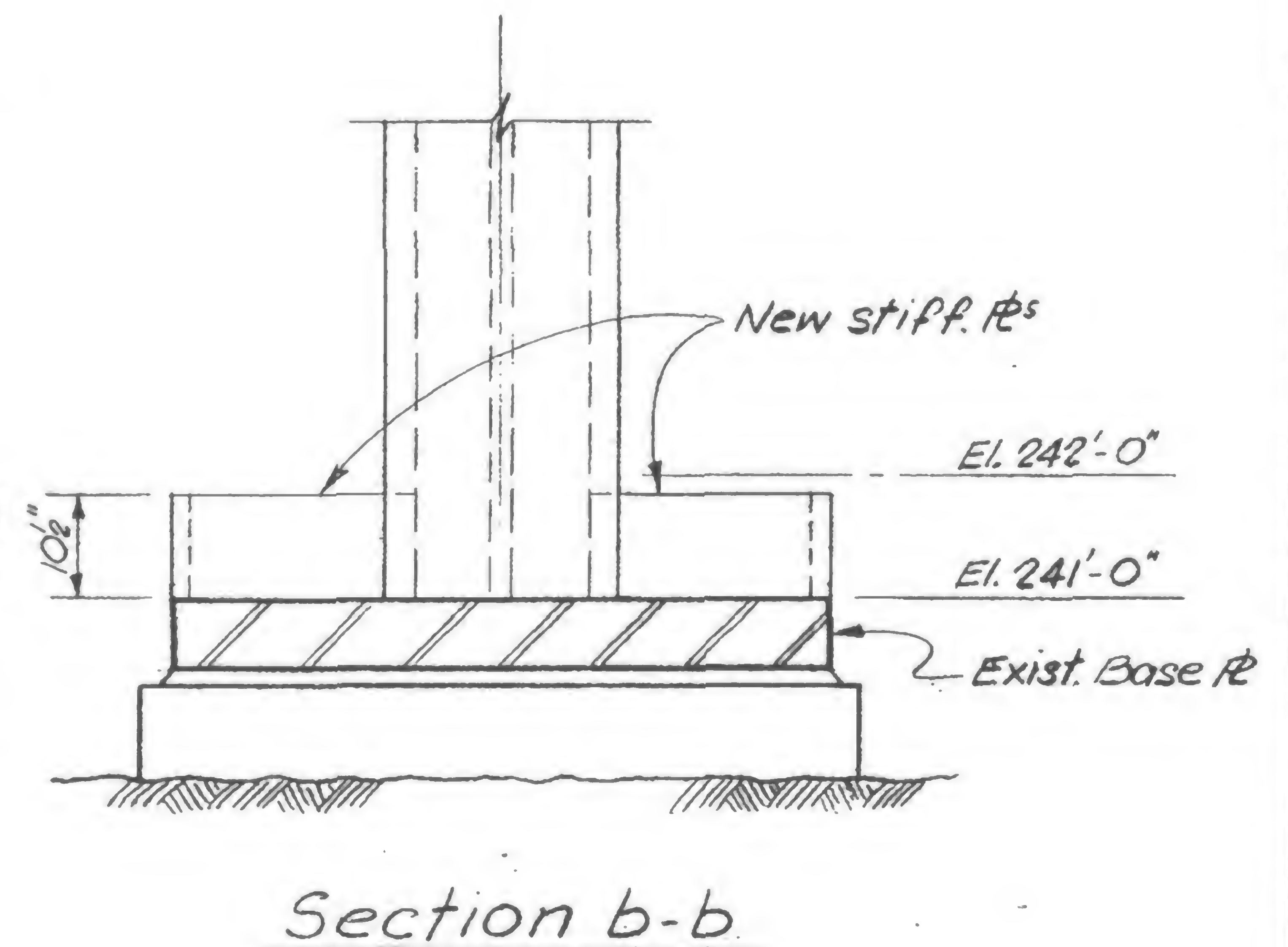
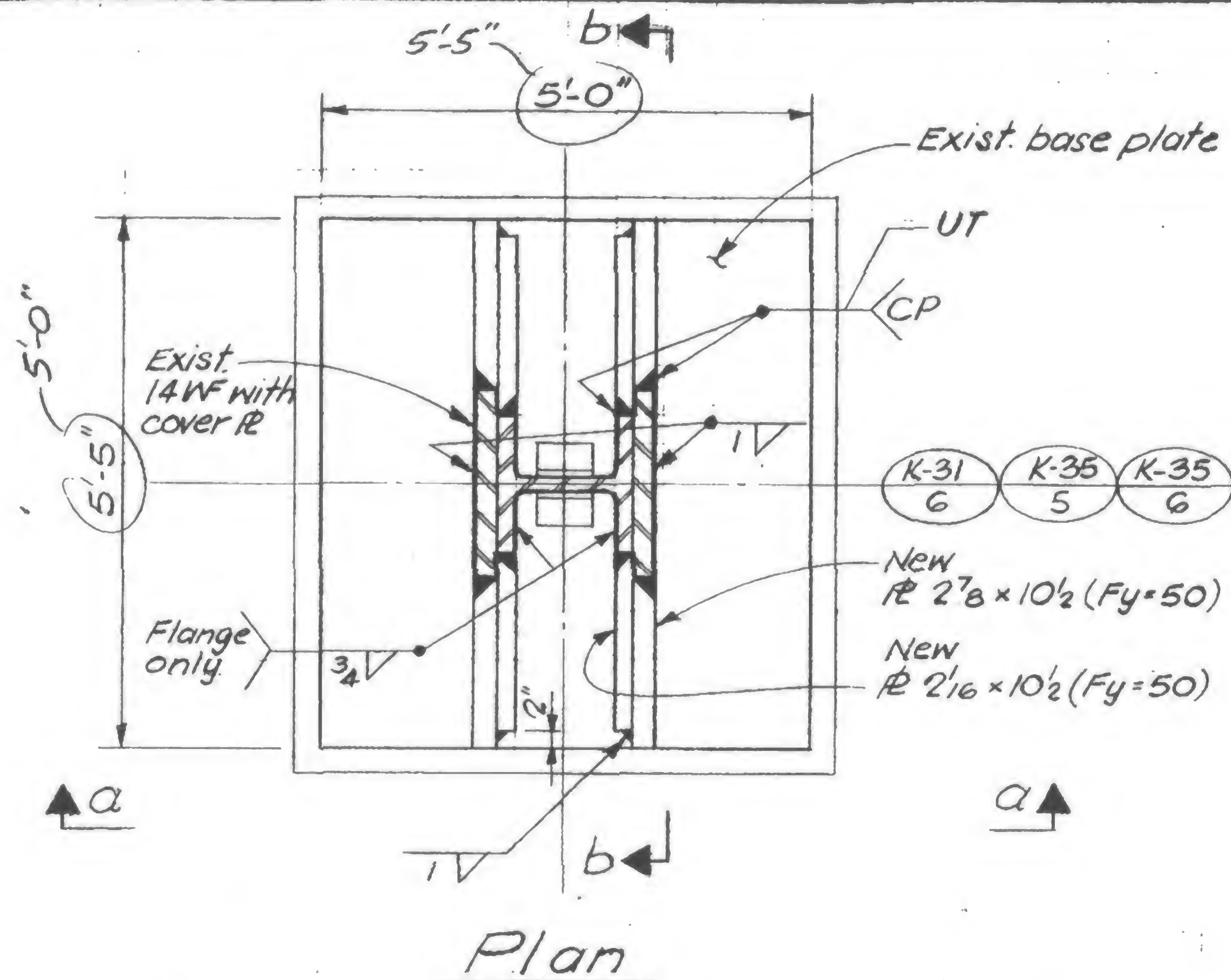
A. FRANQUI

REVIEWED

19-K-1053.3



## REVISIONS



Note: For stiffener to base plate, welding procedure shall include the following:

1. UT Base R. 4 locations (8" x 21") 100% before welding.
2. Preheat (soak) 250°F minimum preheat.
3. E7018 manual or Fabsshield semiautomatic welding.
4. Postheat 200°F for 18-24 hours, slow cool.
5. UT welds after cooling.



DESIGNED  
D.S.

DRAWN  
S.C.

## REVIEWE

REVIEWED  
L E Whitson

19-K-1054



PROJECT

THE WORLD TRADE CENTER

TITLE

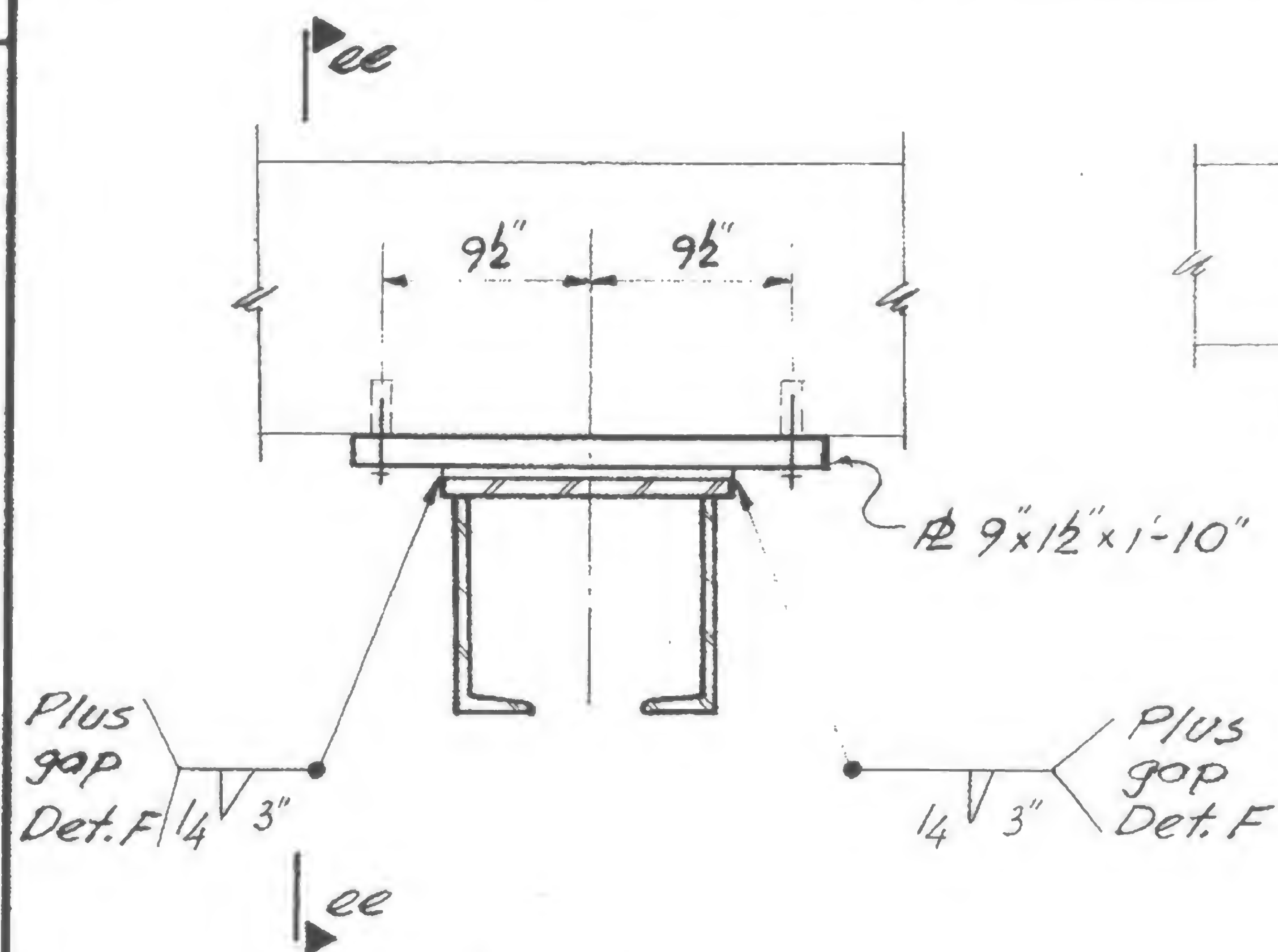
SHEAR HEAD REPAIR - CINCH ANCHORS

DATE

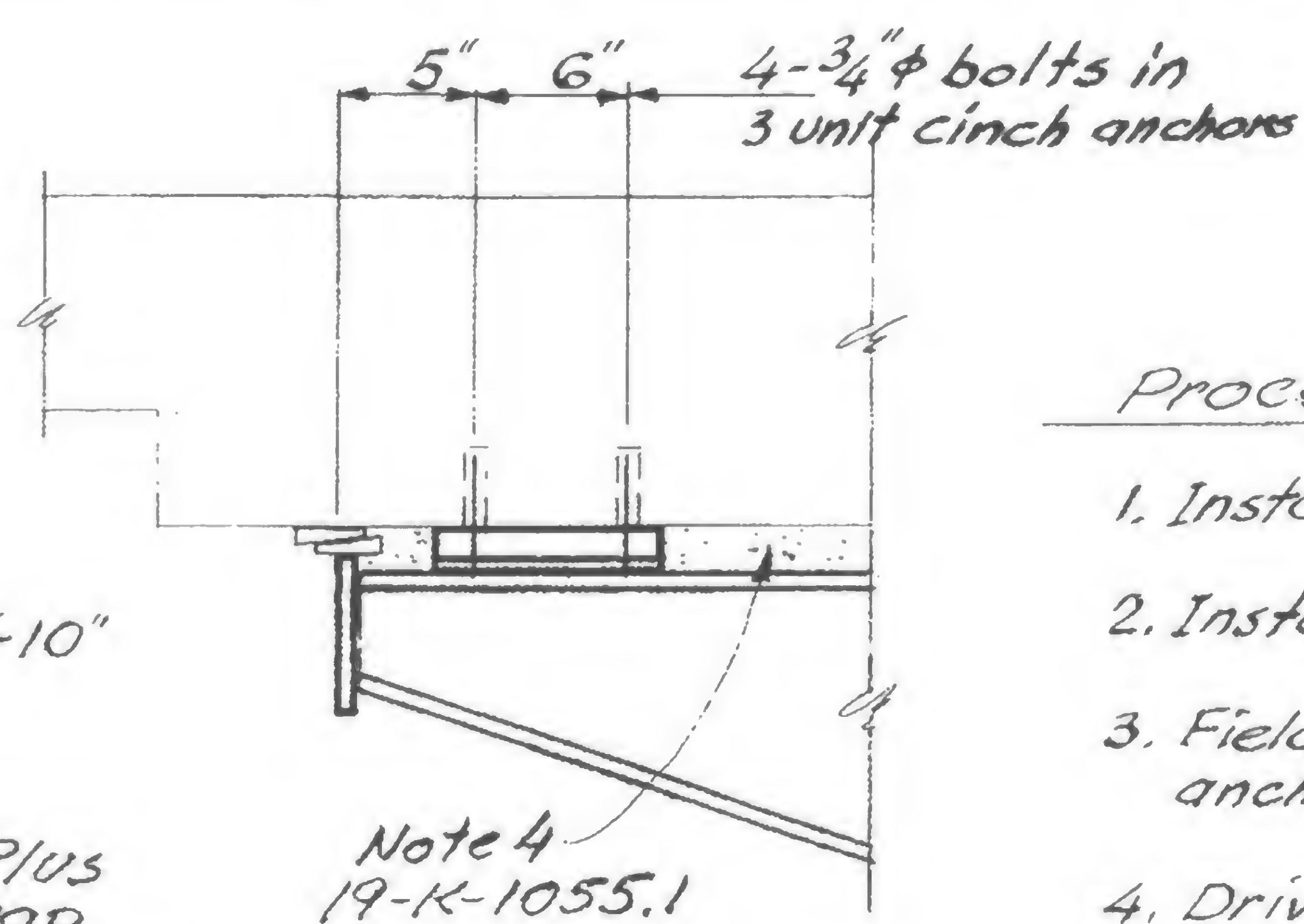
6-30-72

## REVISIONS

10-5-72



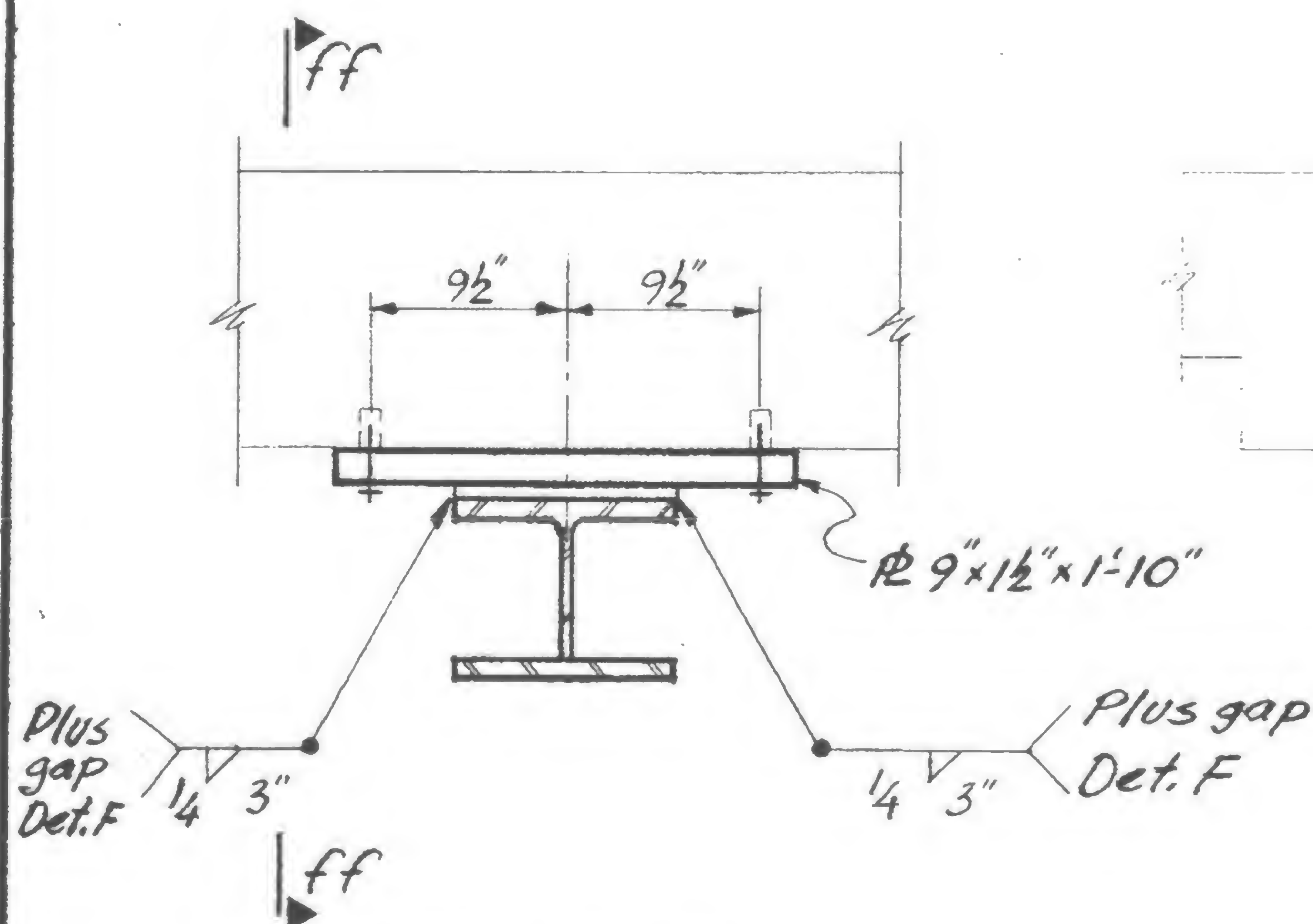
Section e-e  
19-K-1055.2



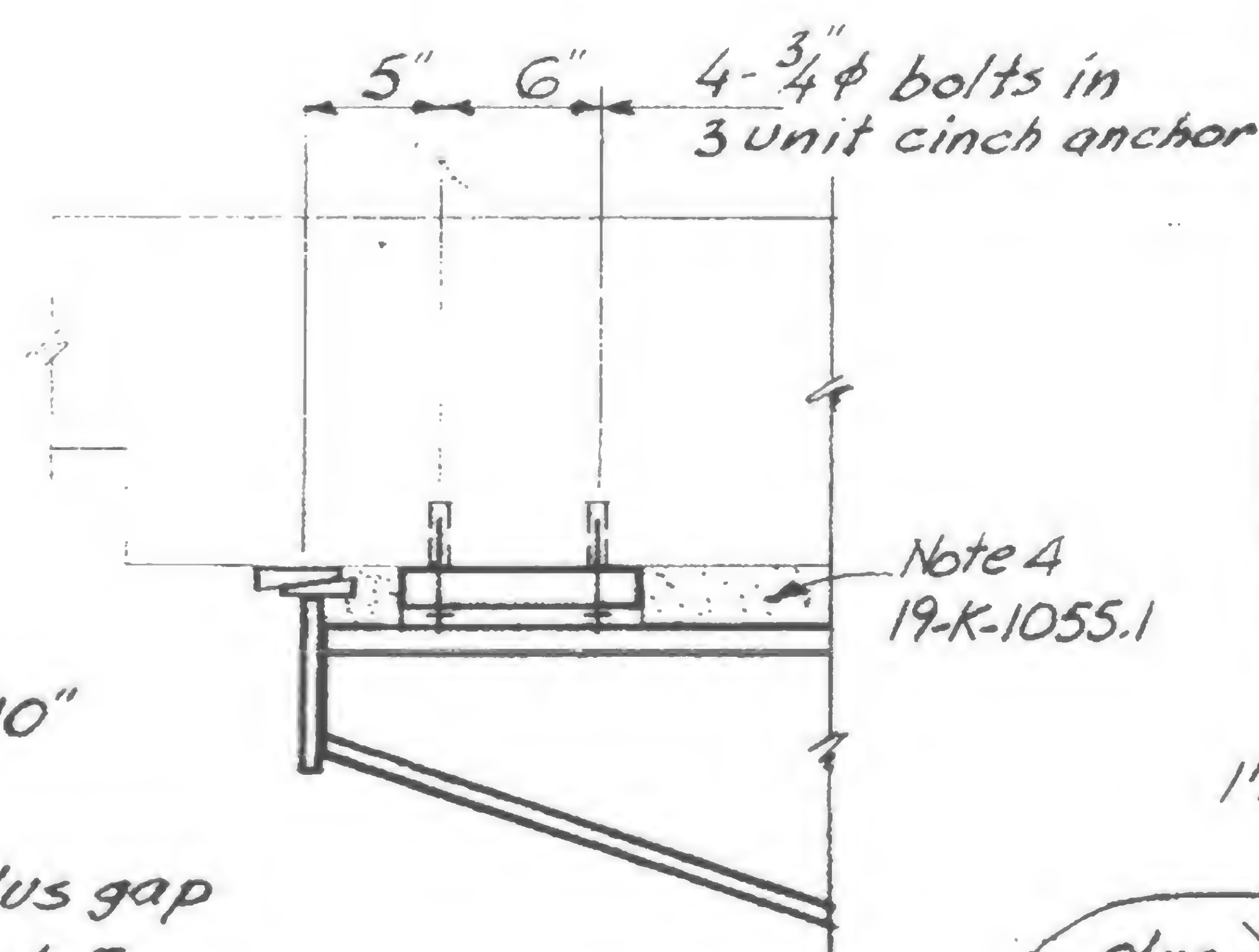
Section ee-ee

## Procedure

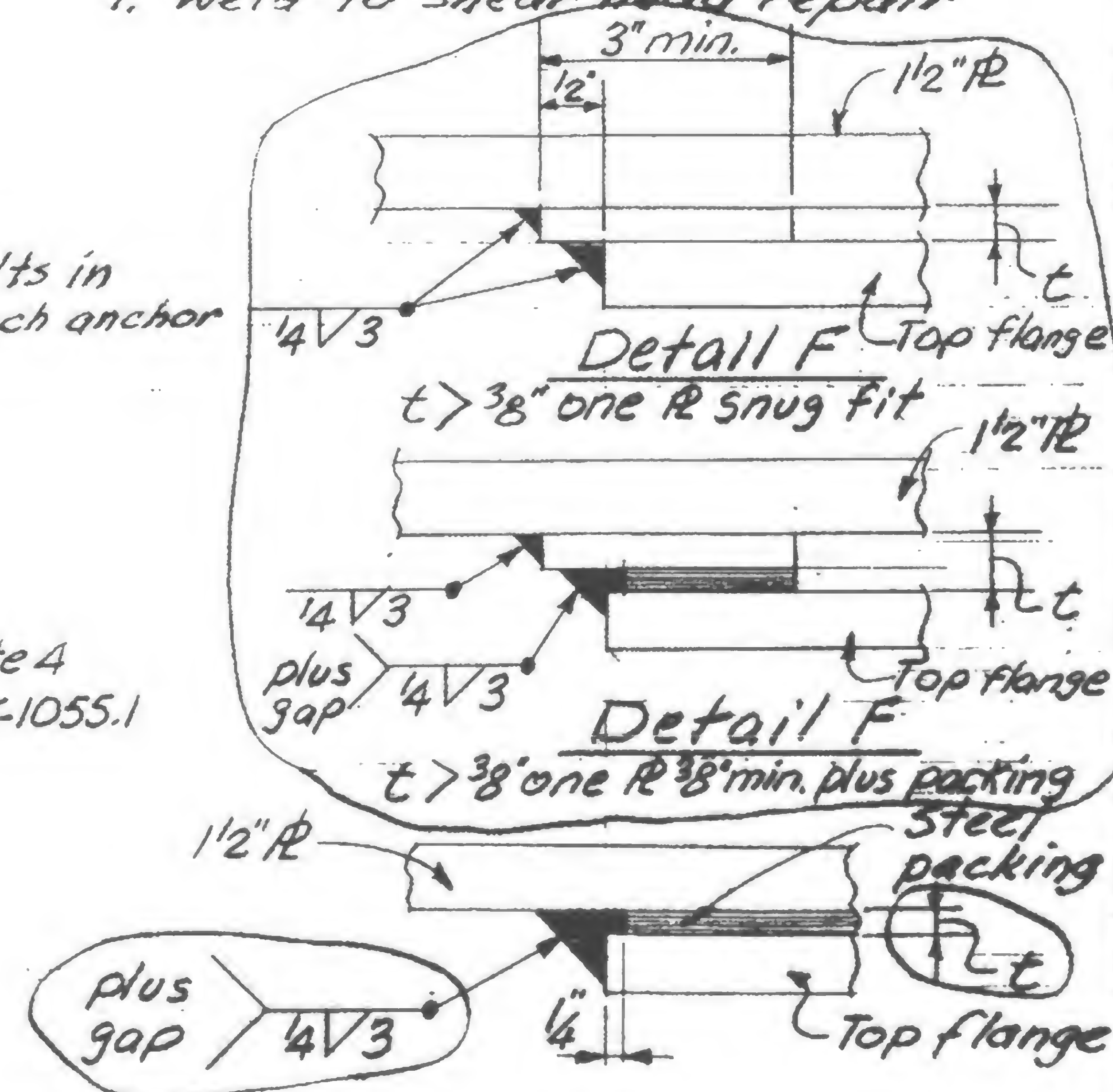
1. Install Steel Shear head repair
2. Install Cinch anchors
3. Field measure as installed cinch anchor locations & drill holes in 1/2" R
4. Drive steel wedges.
5. Tighten bolts to bring plate snug with concrete.
6. Pack space between 1/2" R and top flange shear head repair.
7. Weld to shear head repair



Section f-f  
19-K-1055.2

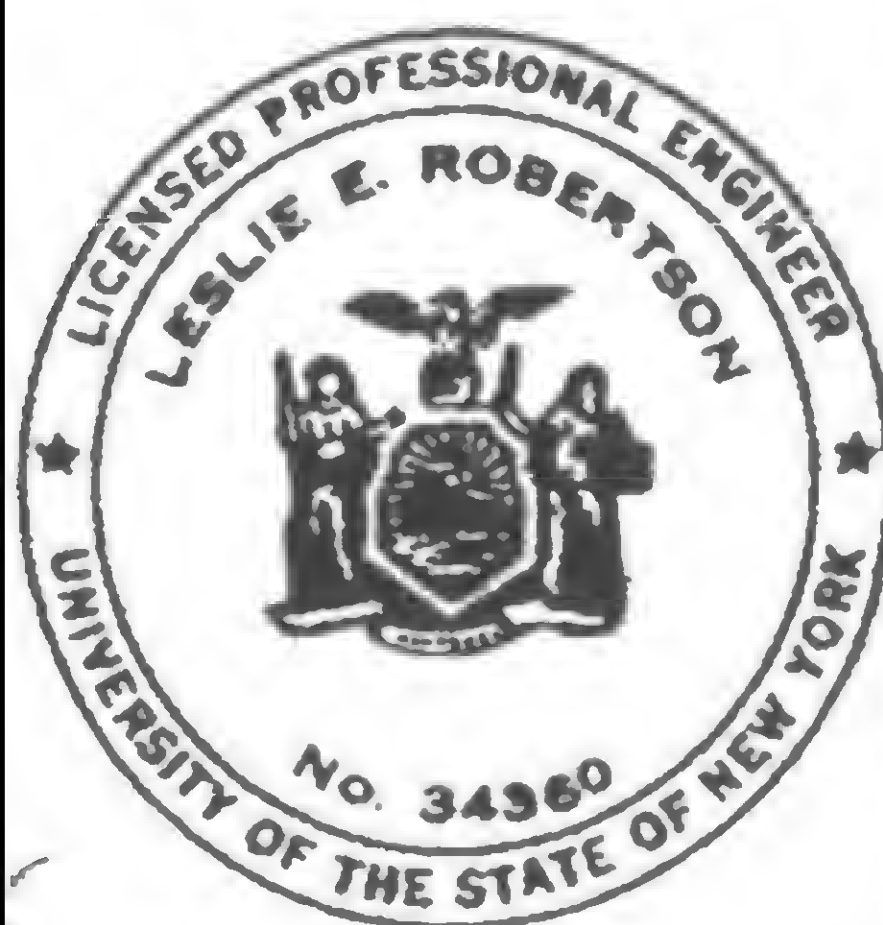


Section ff-ff



Detail F  
t < 3/8"

19-K-1055.3



DESIGNED

DRAWN

JG

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Structural & Civil Engineers

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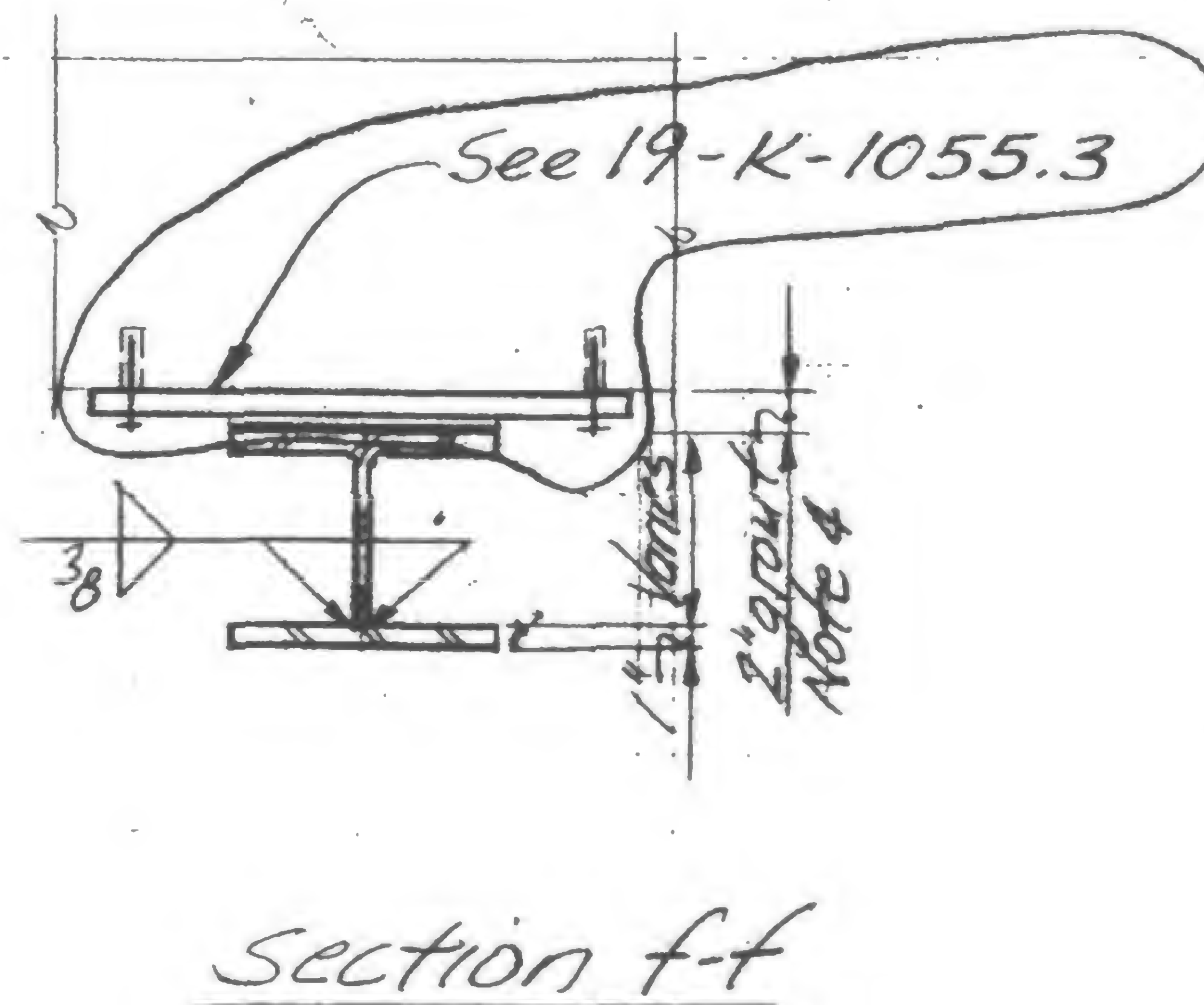
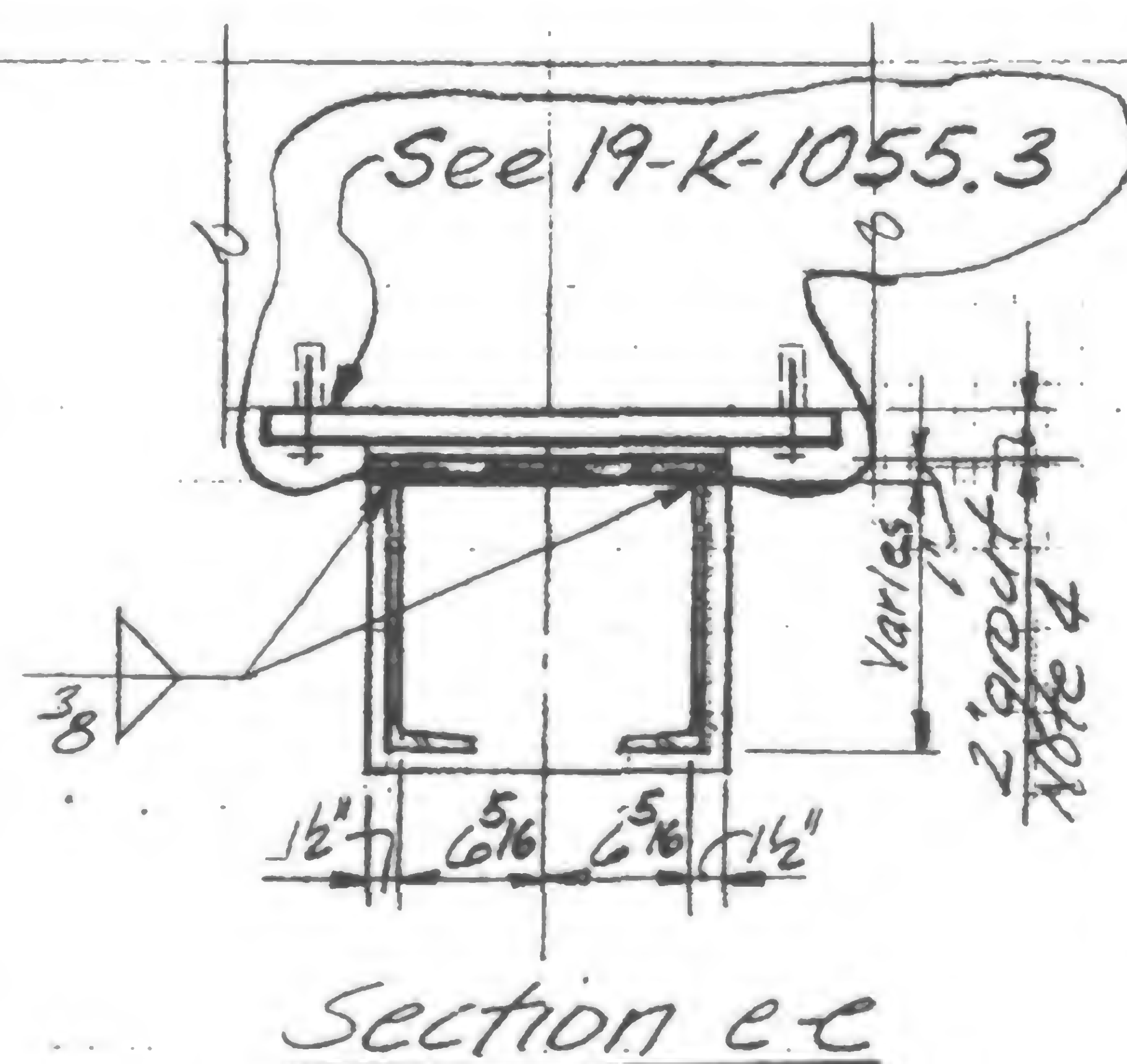
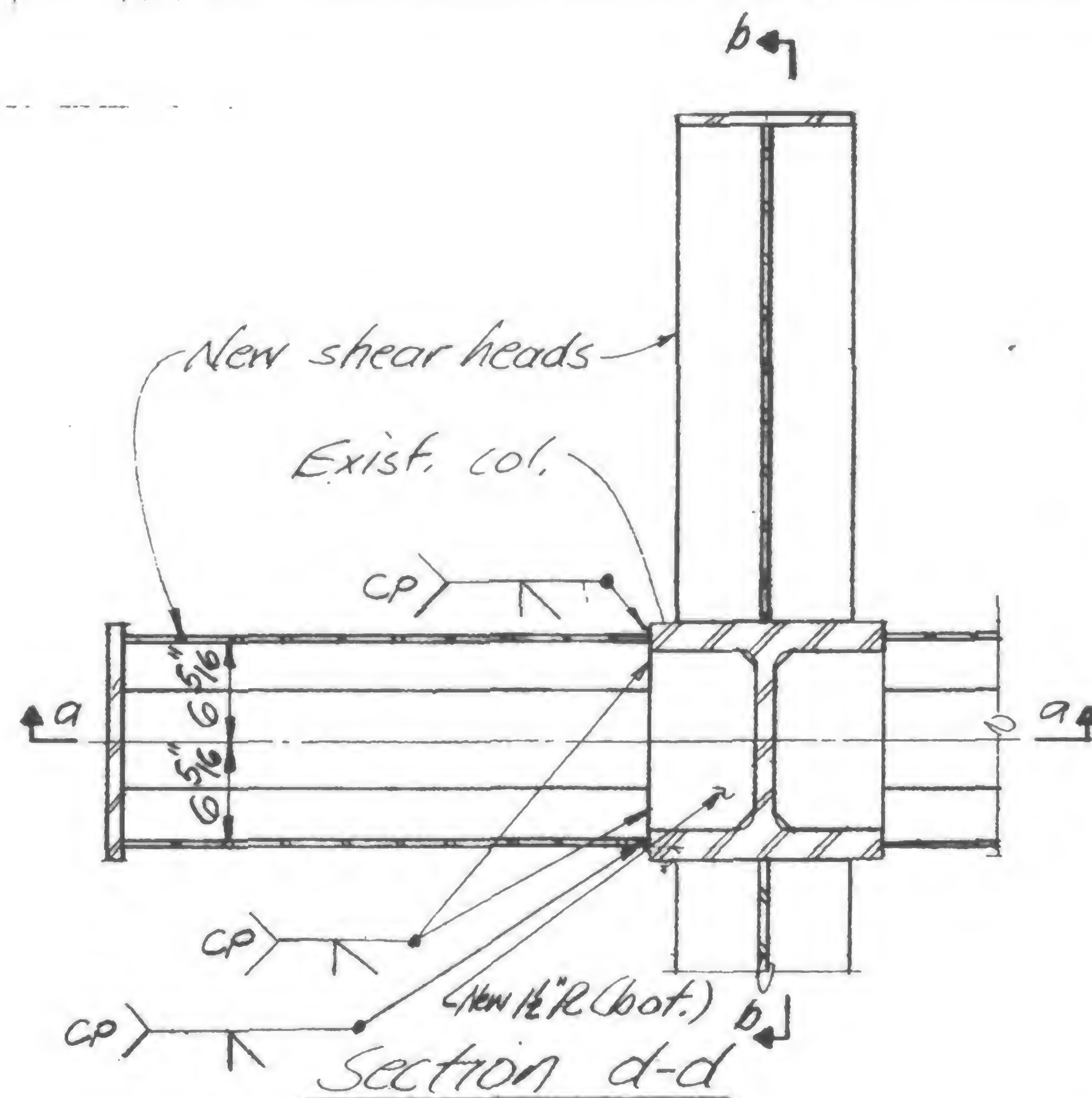
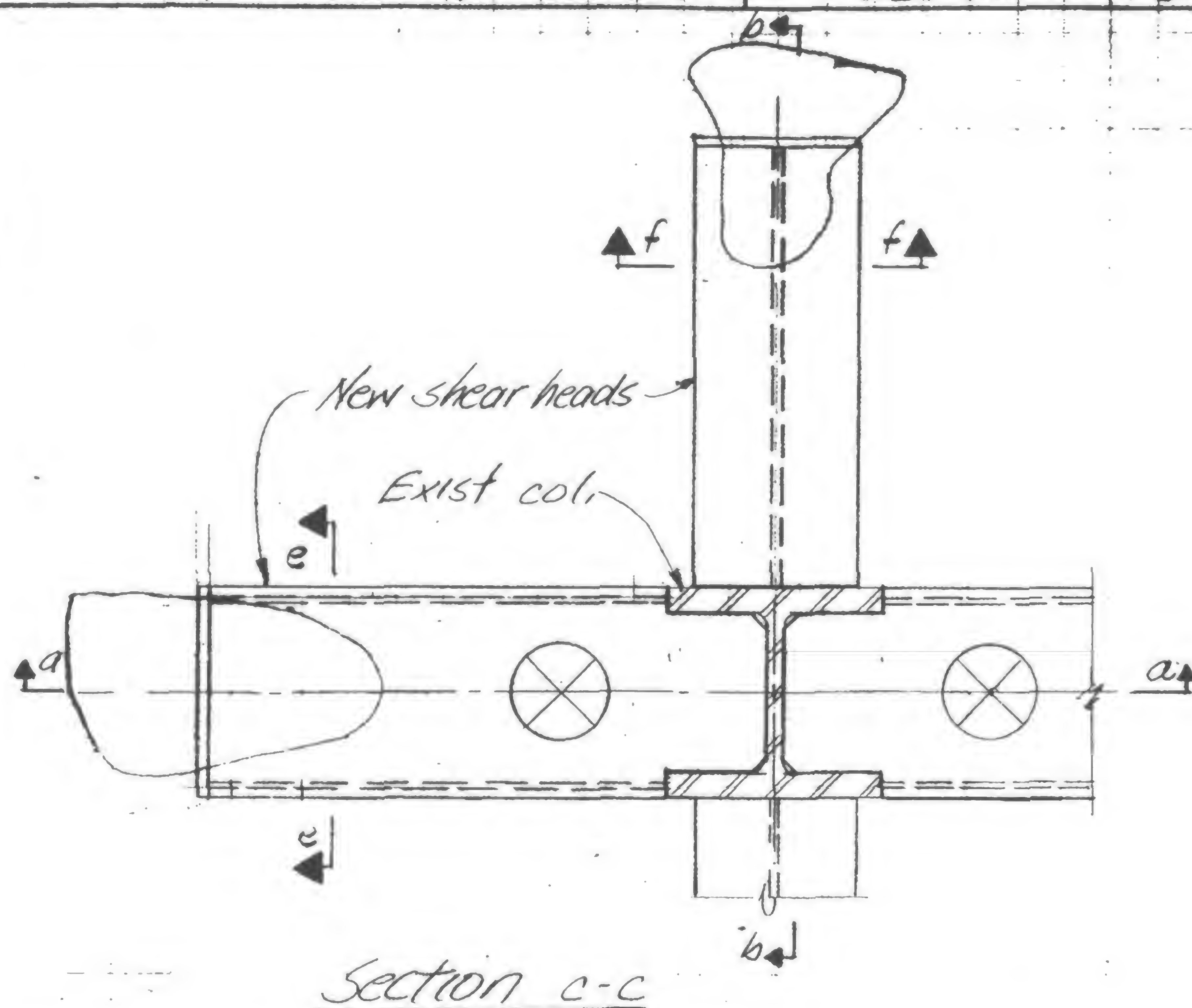
TITLE *DETAIL FOR SHEAR HEAD REPAIR*

DATE 12-23-71

REVISIONS

1-15-72  
Gen. Rev.

6-30-72



19-K-1055.2



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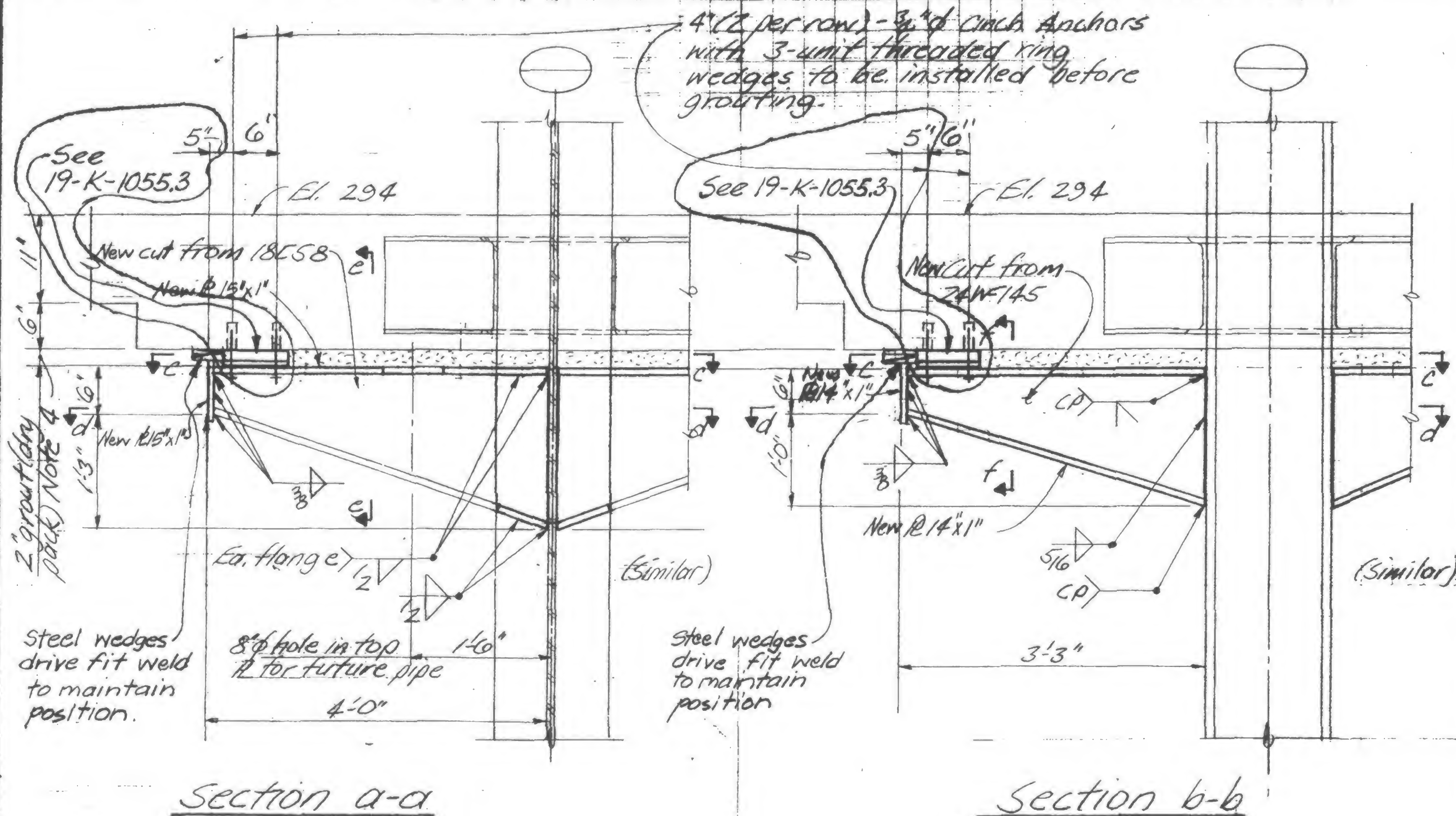
REVIEWED



## REVISIONS

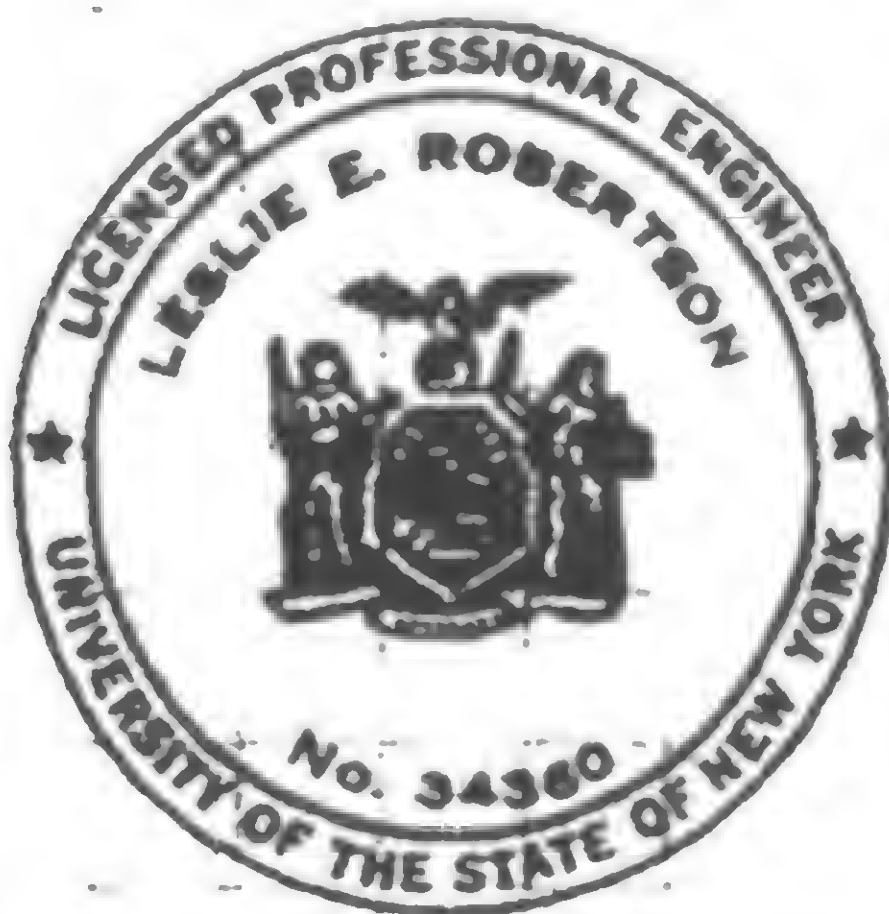
1-15-72  
Gen. Rev.

6-30-72



Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufactures written directions
5. Provide erection aides as required



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**DRAWN**

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19-K-1055.1



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Structural & Civil Engineers

PROJECT **THE WORLD TRADE CENTER**

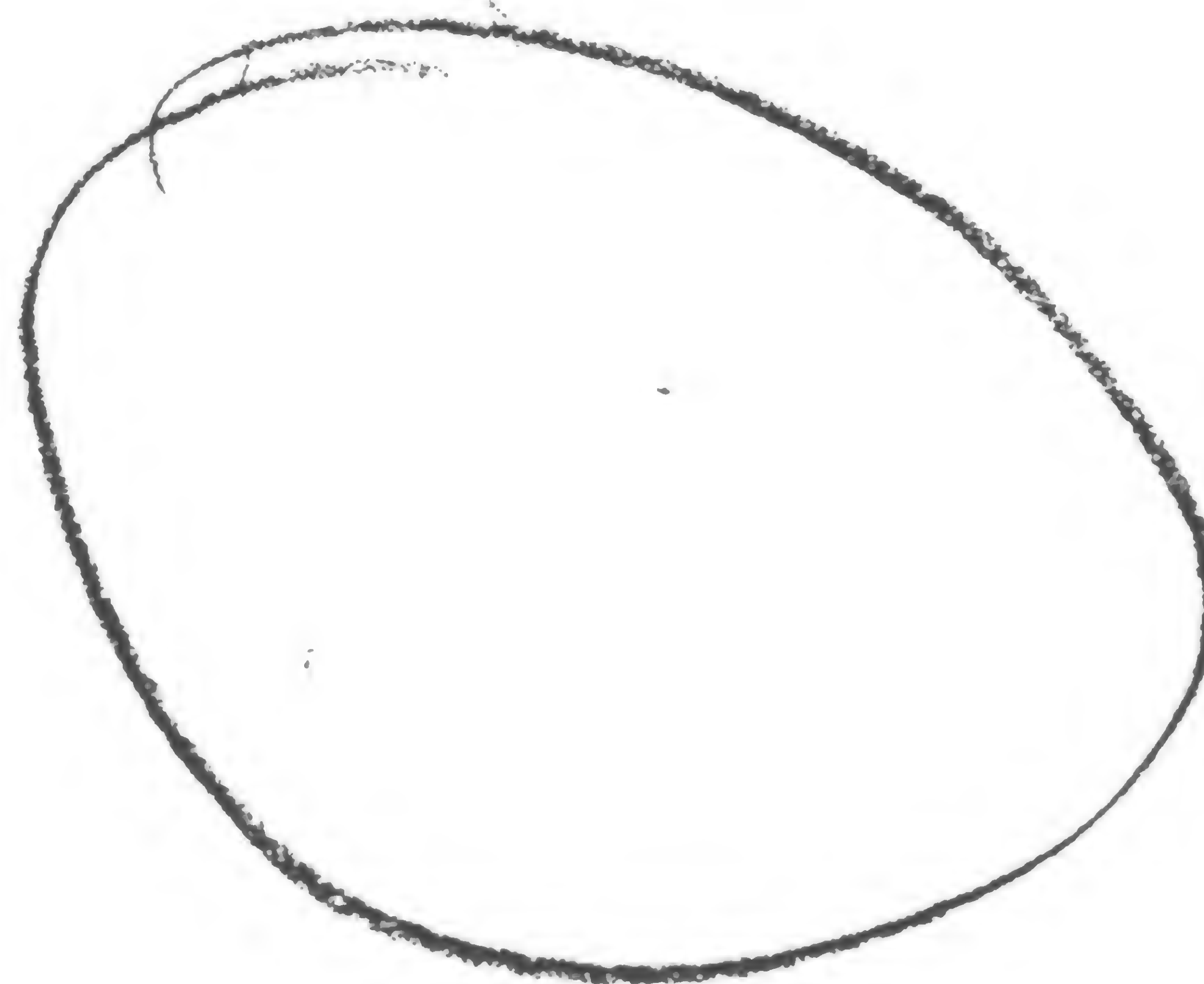
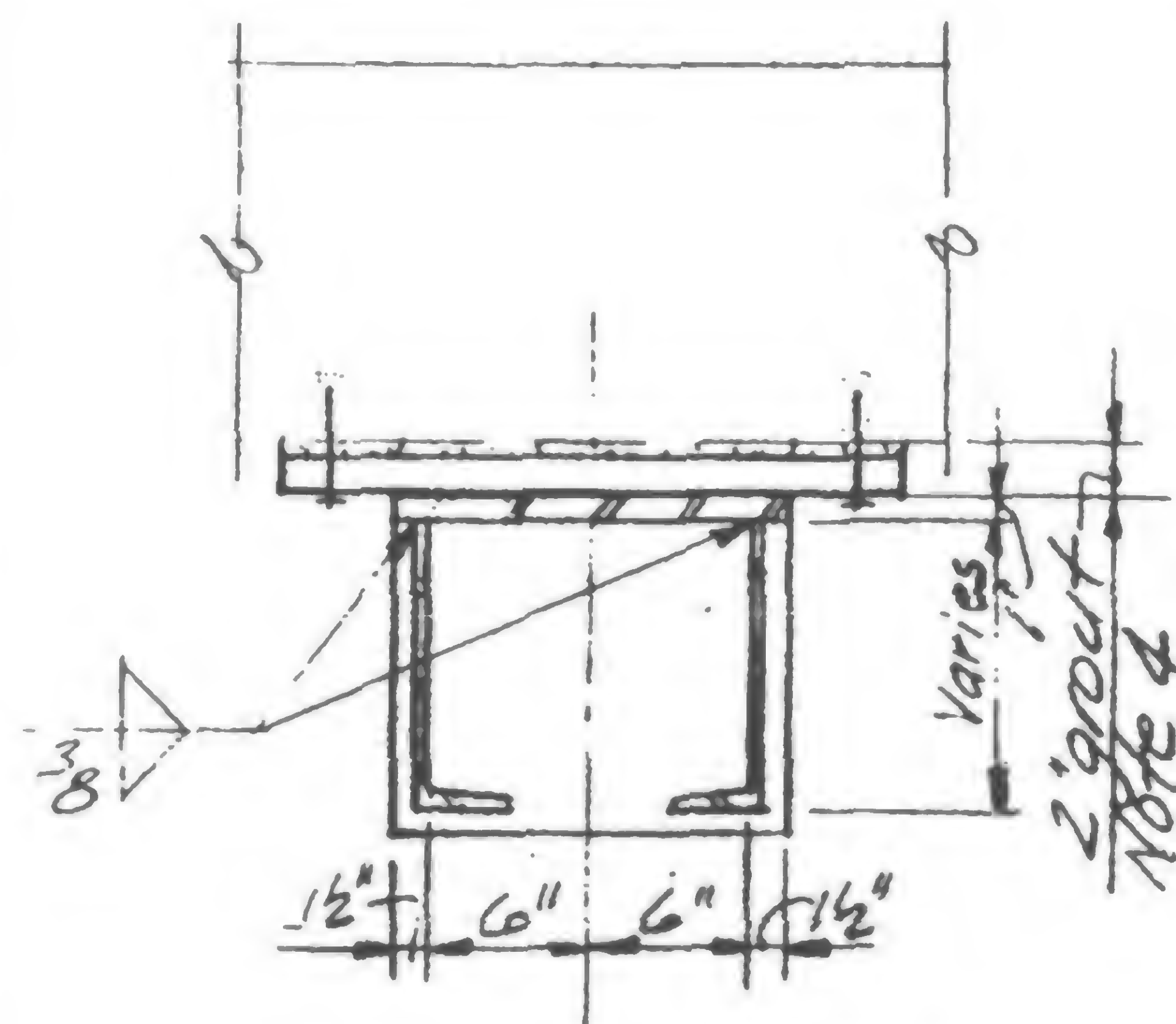
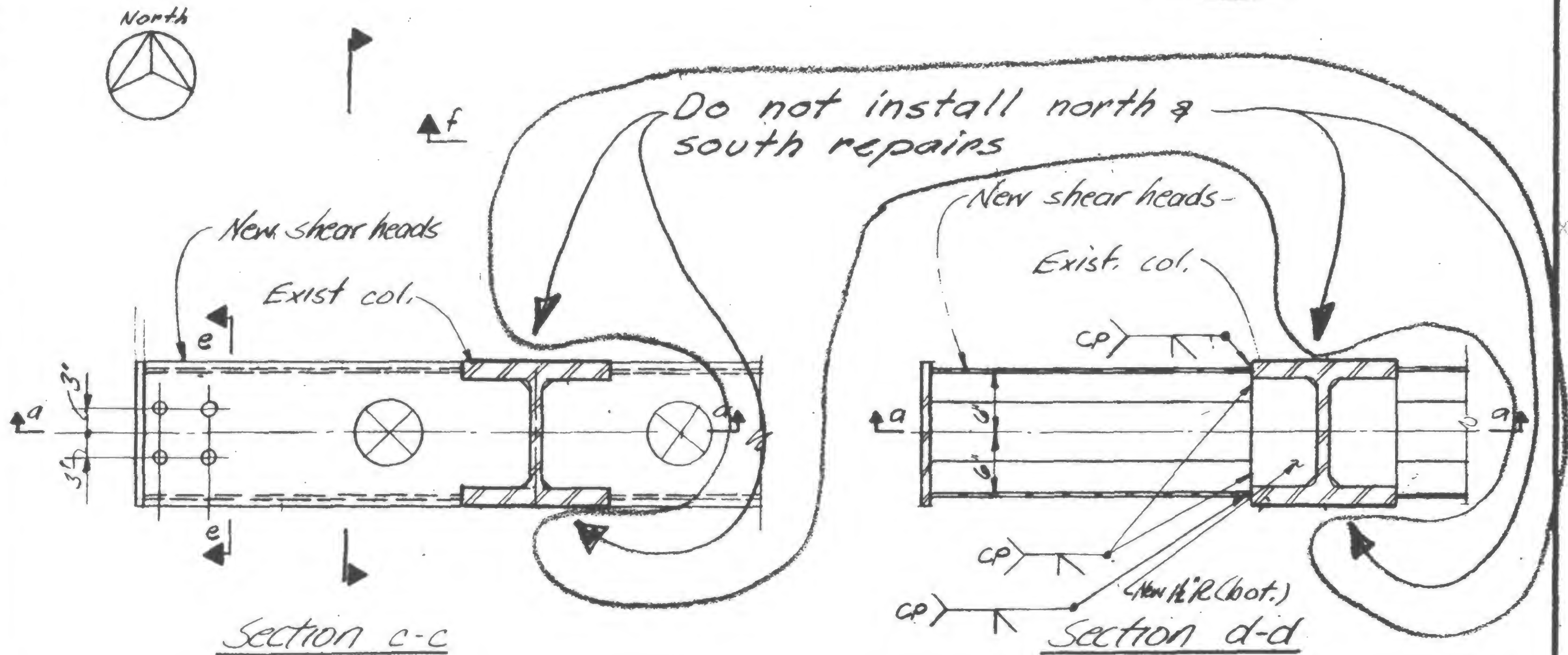
TITLE **DETAIL FOR SHEAR HEAD REPAIR** **K43/7 & K43/8**

DATE **12-23-71**

REVISIONS

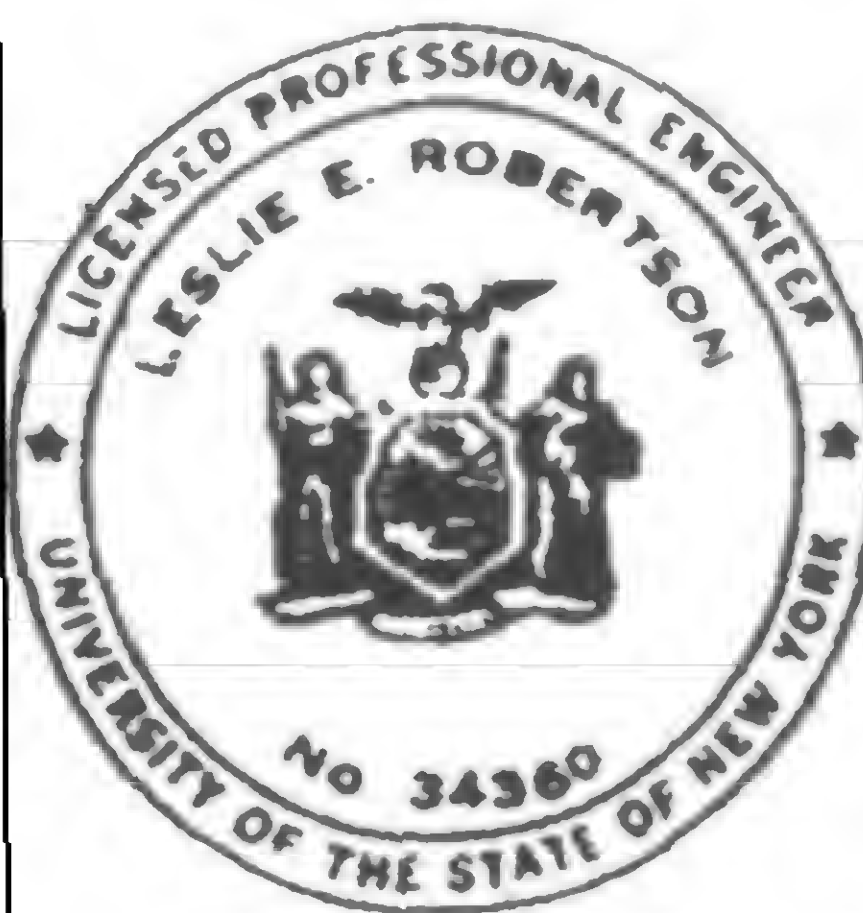
1-15-72  
Gen. Rev.

6-30-72



**K43/7 & K43/8**

**19-K-1055.2**



SIGNED

DRAWN

REVIEWED



PROJECT THE WORLD TRADE CENTER

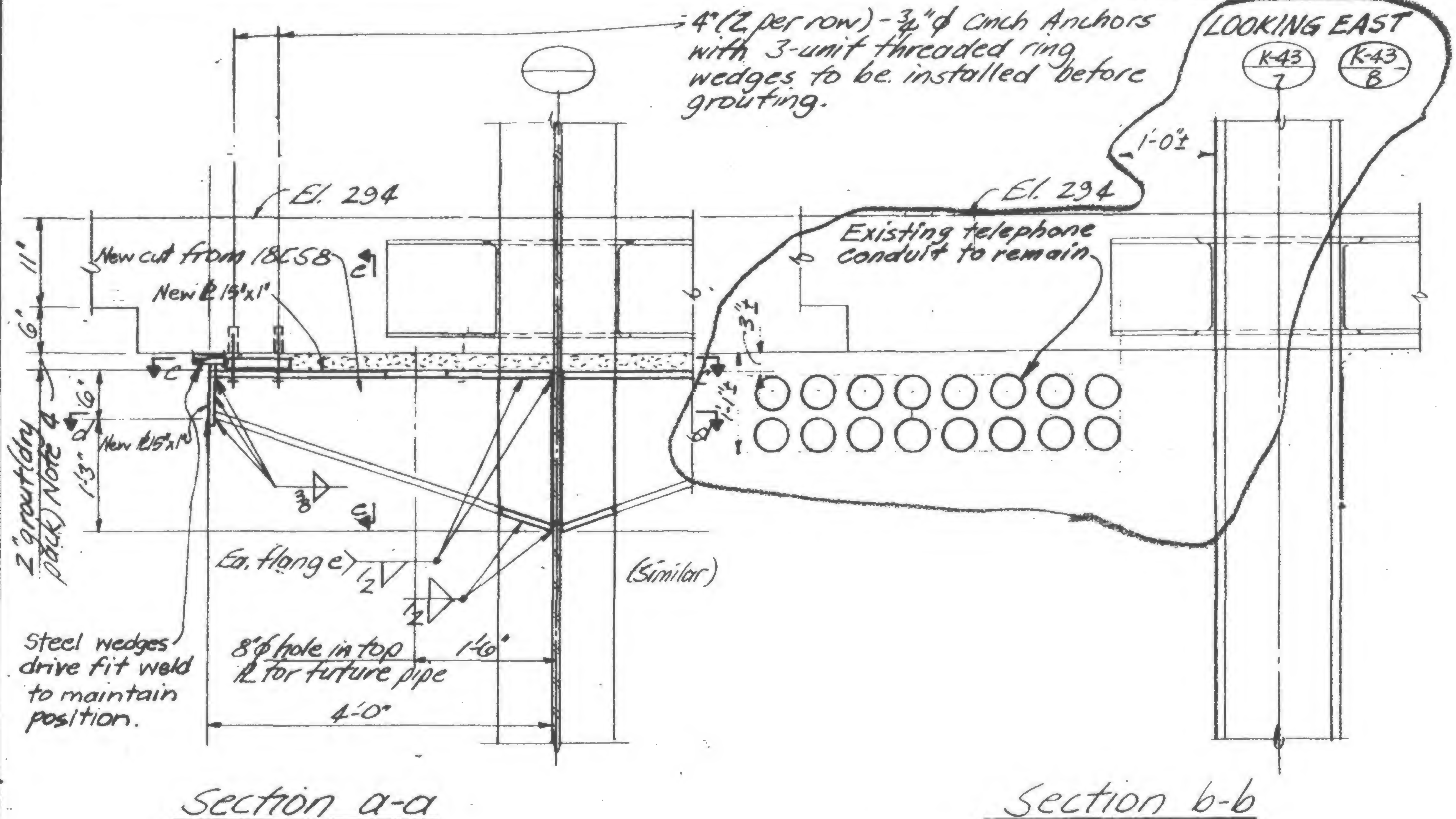
TITLE DETAIL FOR SHEAR HEAD REPAIR

K-43/7 &amp; K-43/8

DATE 12-23-71

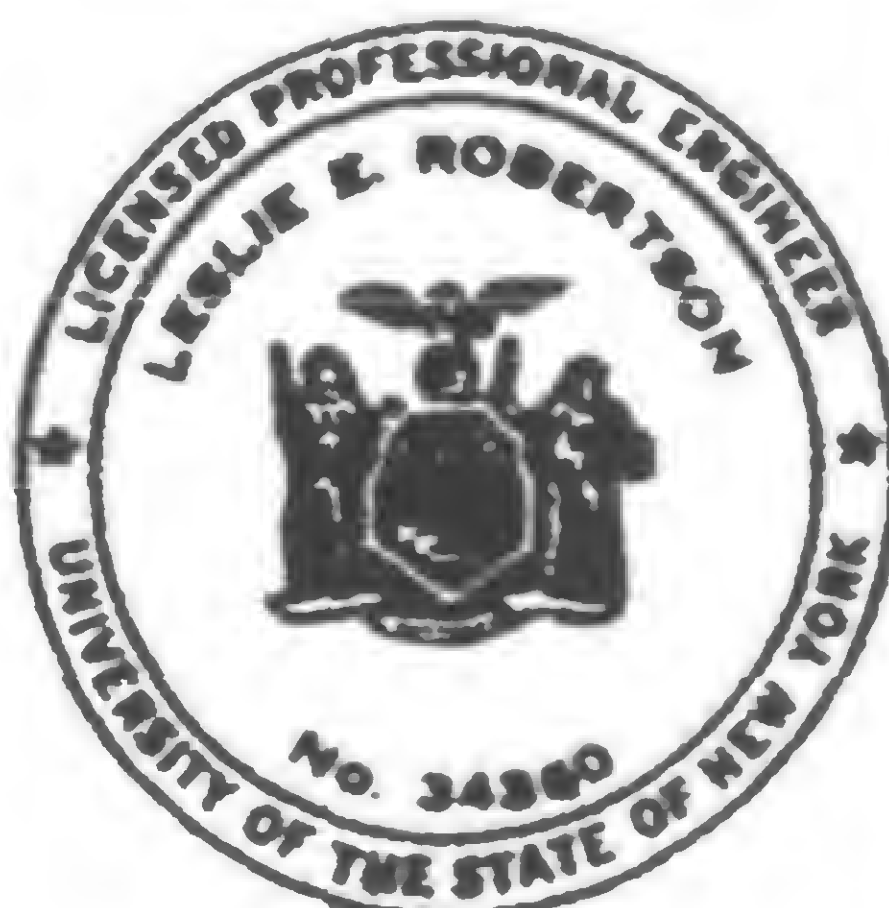
## REVISIONS

1-15-72  
Gen. Rev.  
6-30-72



## Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufactures written directions
5. Provide erection aides as required.



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DRAWN

REVIEWED

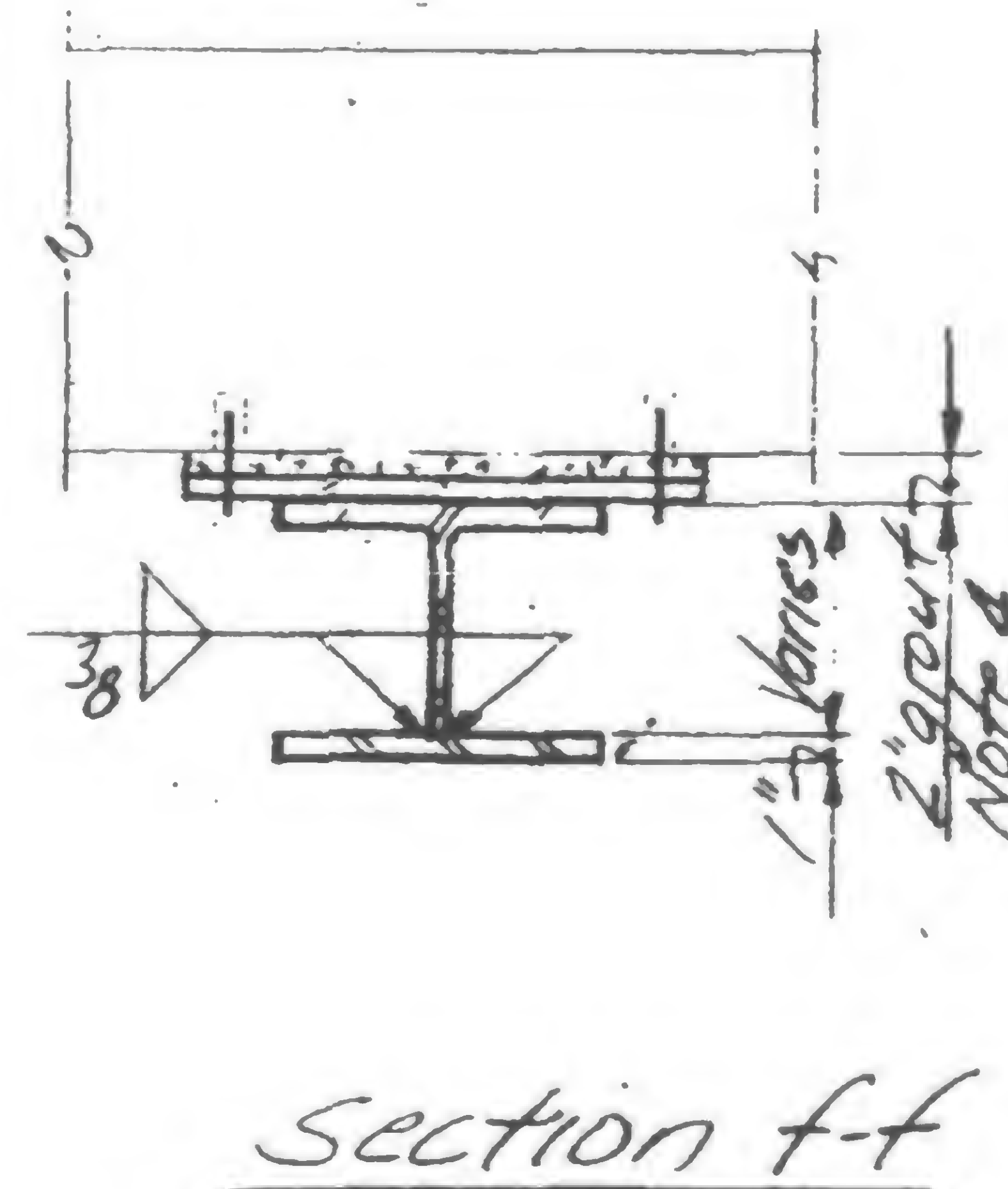
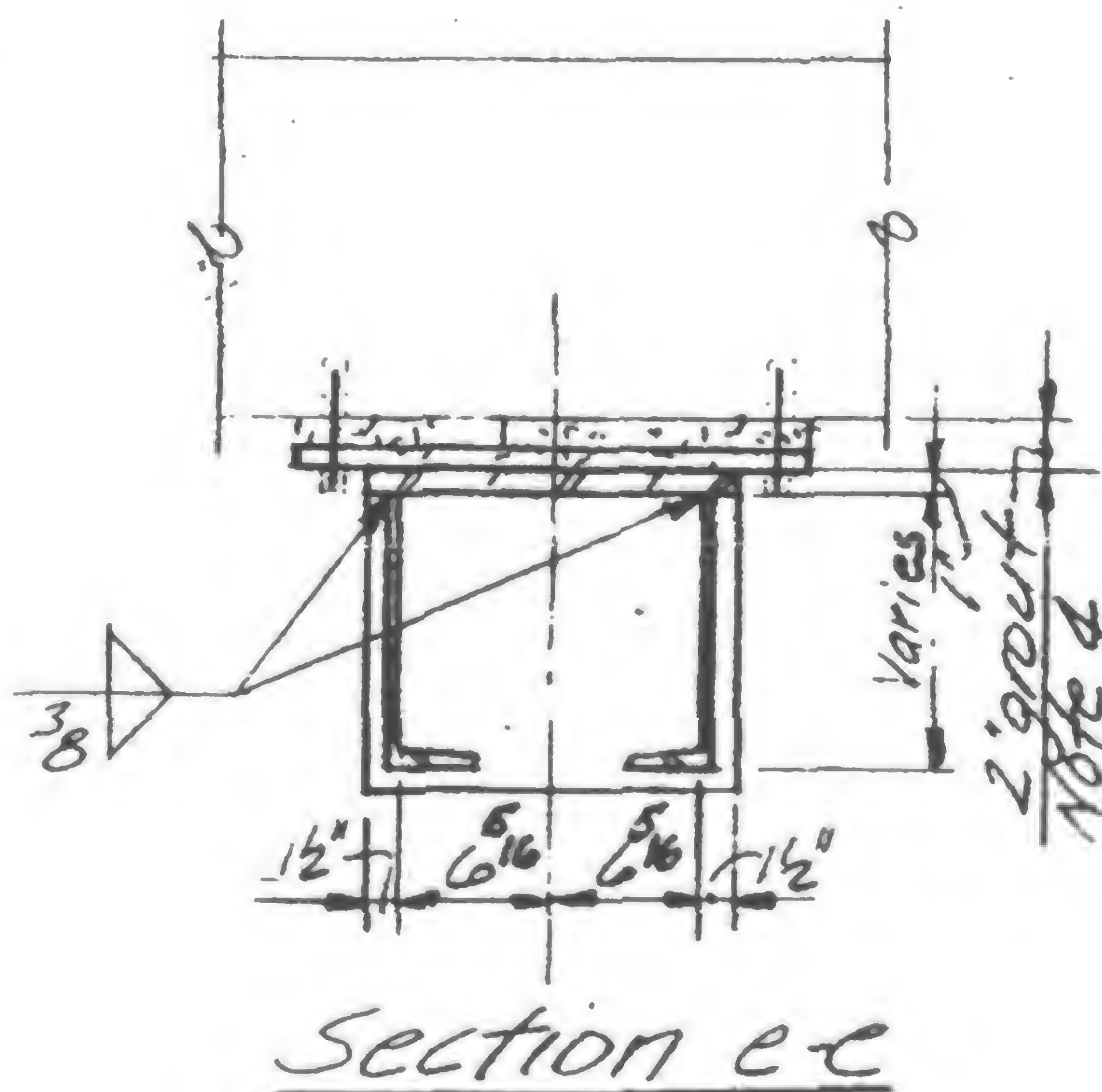
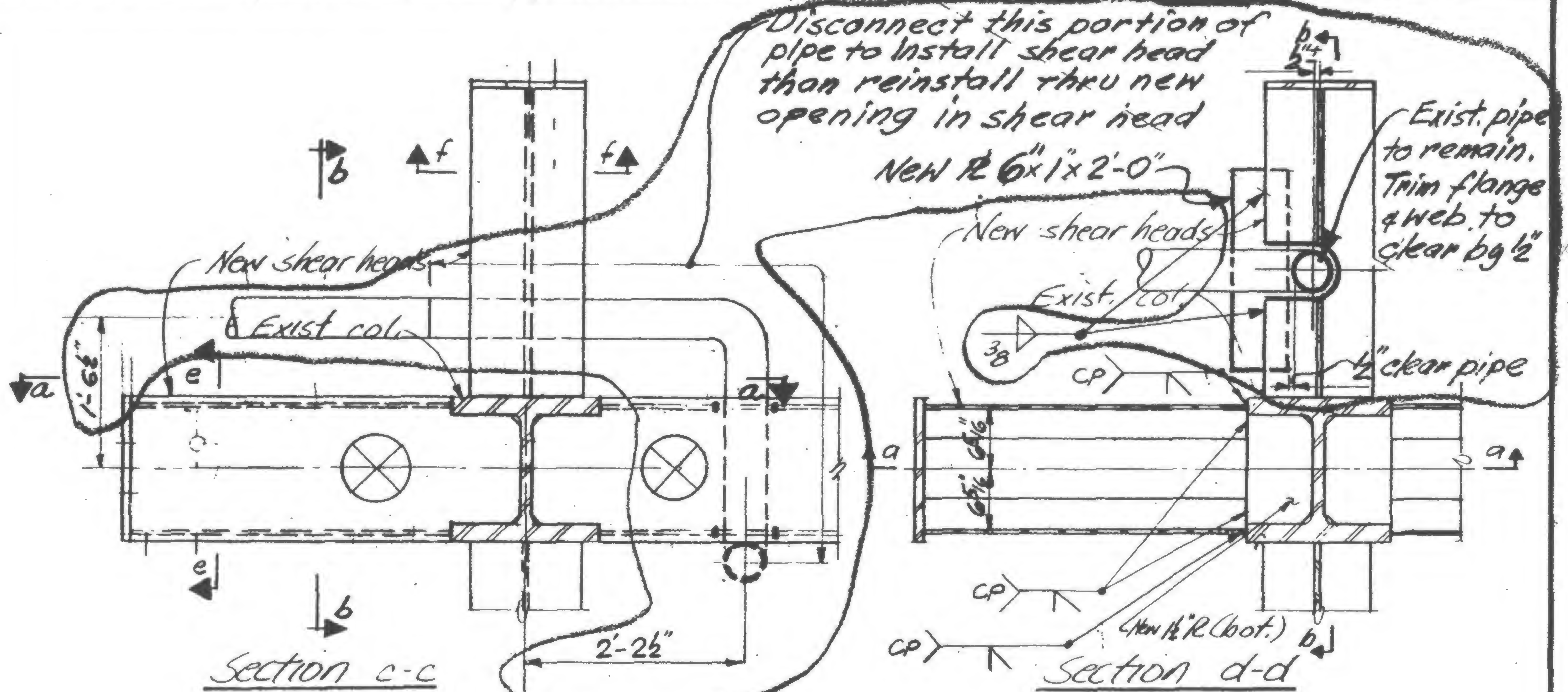
K43/7 &amp; K43/8

19-K-1055.1



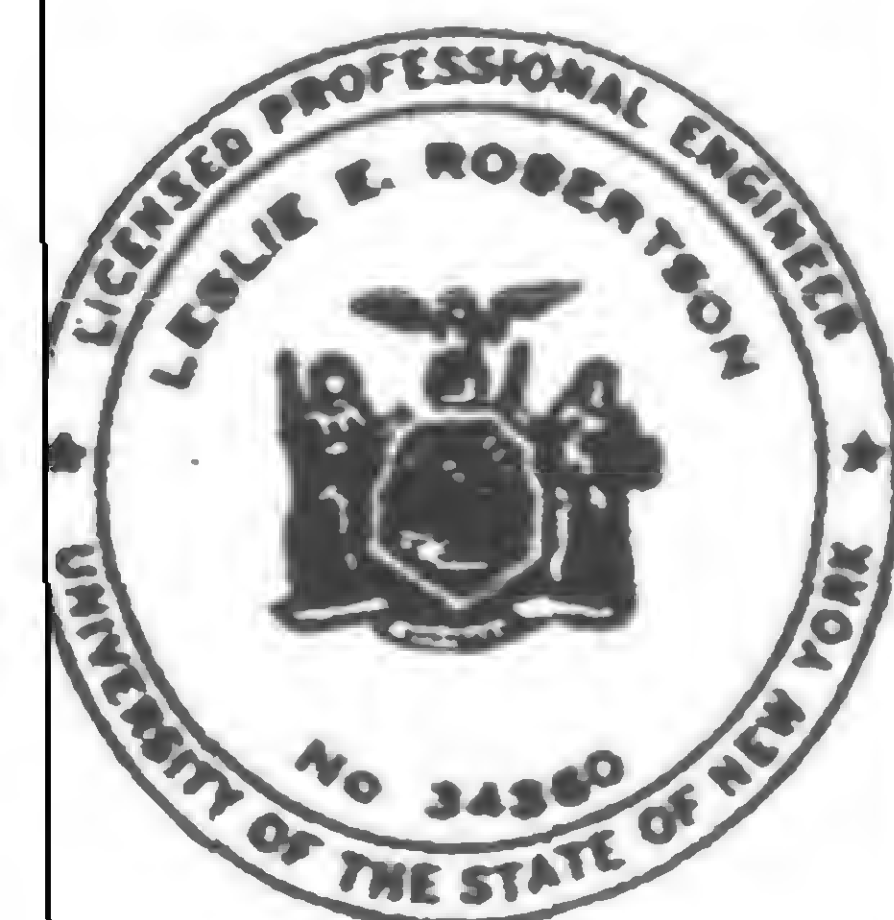
REVISIONS

1-15-72  
Gen. Rev.  
6-30-72



K41/8

19-K-1055.2



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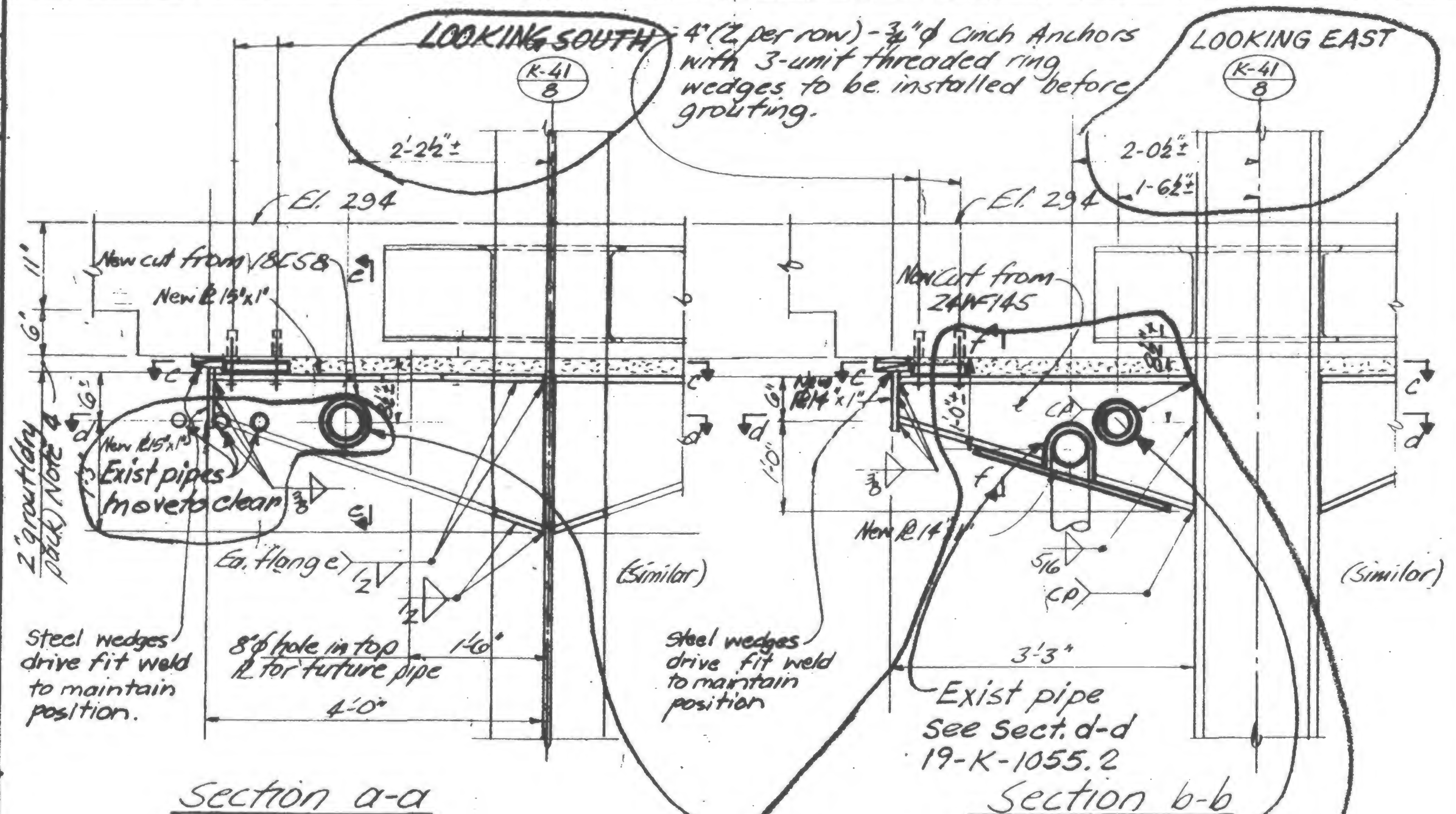
REVIEWED



## REVISIONS

1-15-72  
Gen. Rev.

6-30-72 R



Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70xx
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufactures written directions
5. Provide erection aides as required

New round opening -  
1" larger than exist.  
pipe. See Sect. C-C  
19-K-1055.2



**STOCKS**

**DRAWN**

REVIEWED

K 41/8

19-K-1055.1



PROJECT

THE WORLD TRADE CENTER

TITLE

DETAIL FOR SHEAR HEAD REPAIR K37/9 &amp; K41/9

DATE

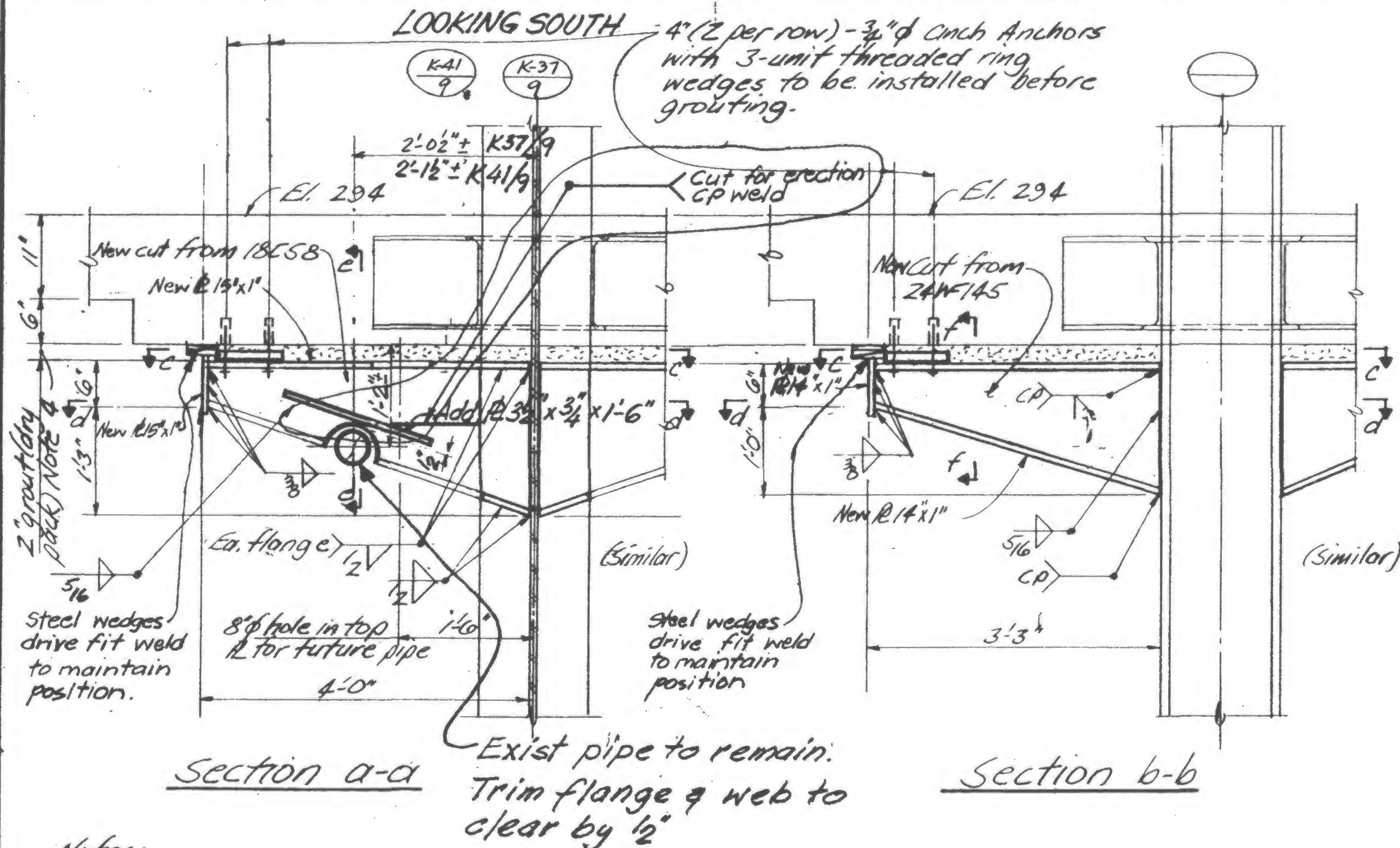
12-23-71

## REVISIONS

1-15-72  
Gen. Rev.

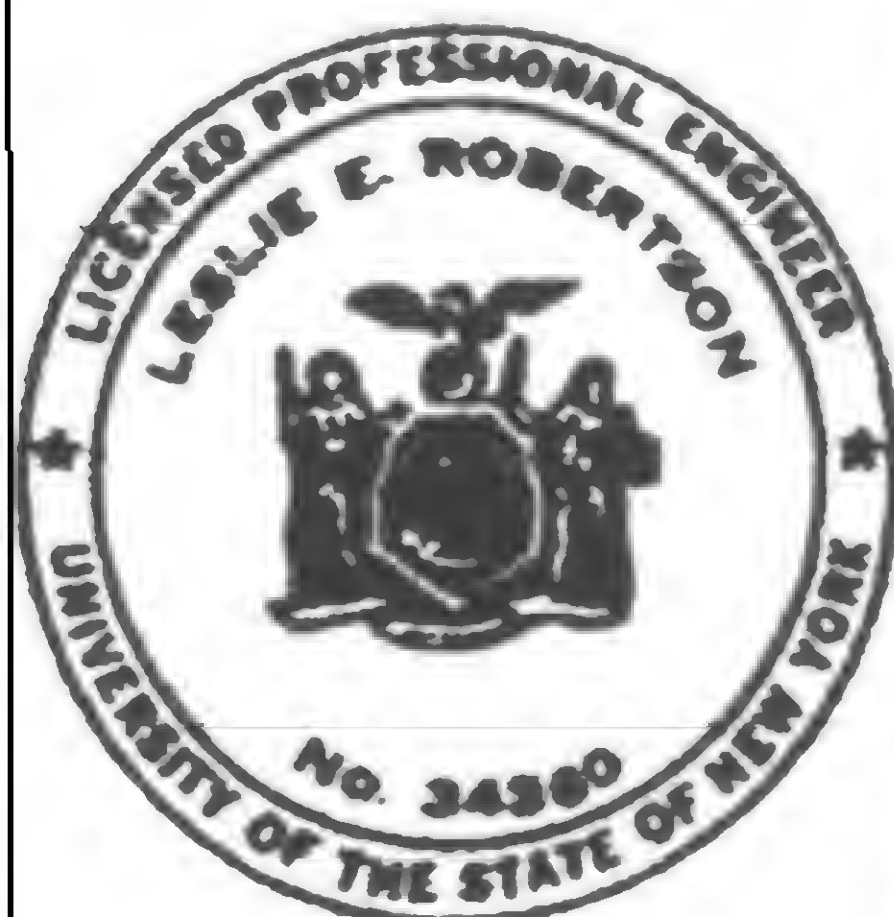
6-30-72

8-31-72



## Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36.
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Emulco grout mixed to flowable consistency and placed in conformance with manufactures written directions
5. Provide erection aides as required



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DRAWN

REVIEWED

K37/9 &amp; K41/9

19-K-1055.1



PROJECT THE WORLD TRADE CENTER

TITLE DETAIL FOR SHEAR HEAD REPAIR - K37/2

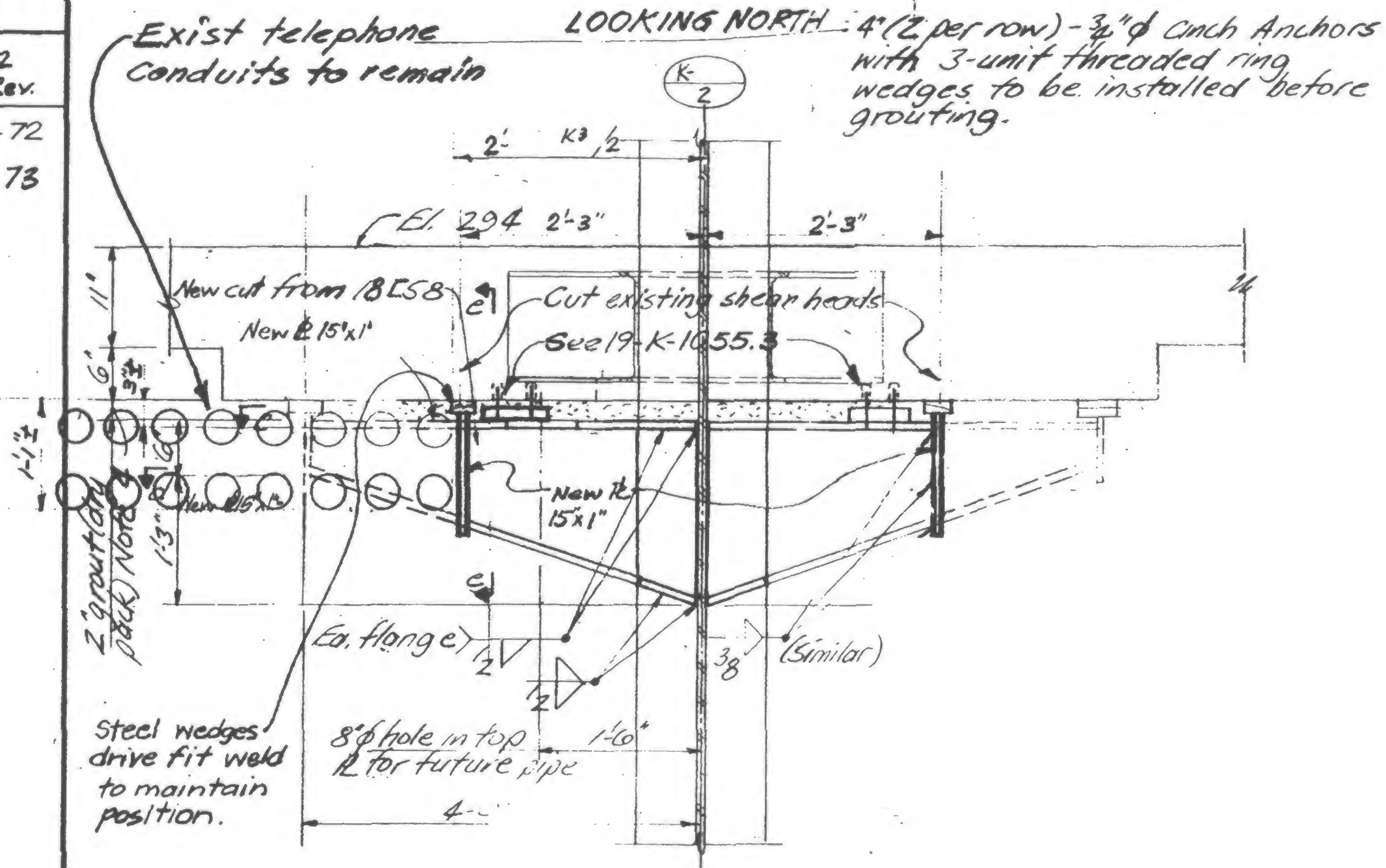
DATE 12-23-71

## REVISIONS

1-15-72  
Gen. Rev.

6-30-72

5-4-73

Section a-aNotes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufacturers written directions
5. Provide erection aides as required



DESIGNED

DRAWN

REVIEWED

K37/2

19-K-1055.1



PROJECT THE WORLD TRADE CENTER

TITLE DETAIL FOR SHEAR HEAD REPAIR K35/10

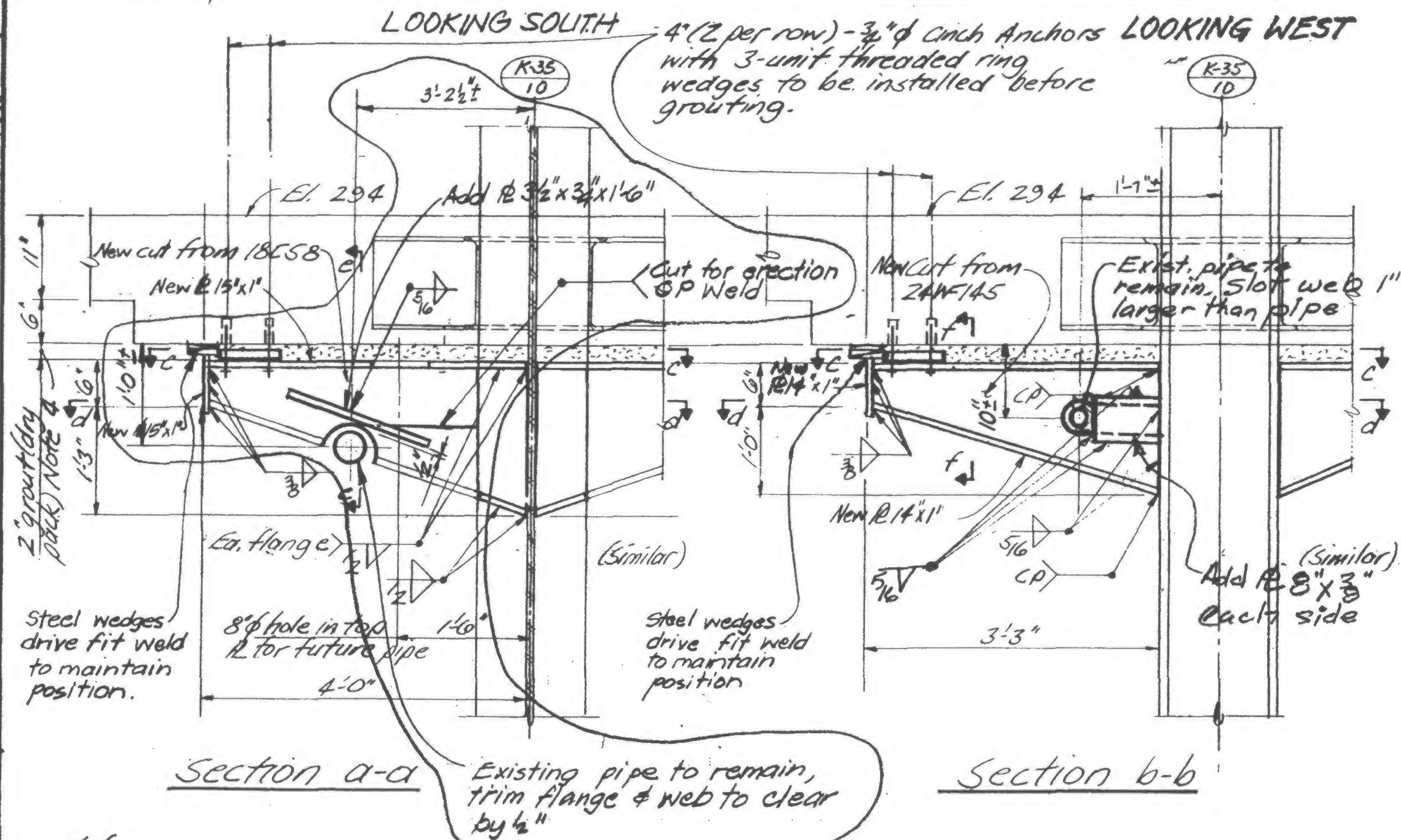
DATE 12-23-71

## REVISIONS

1-15-72  
Gen. Rev.

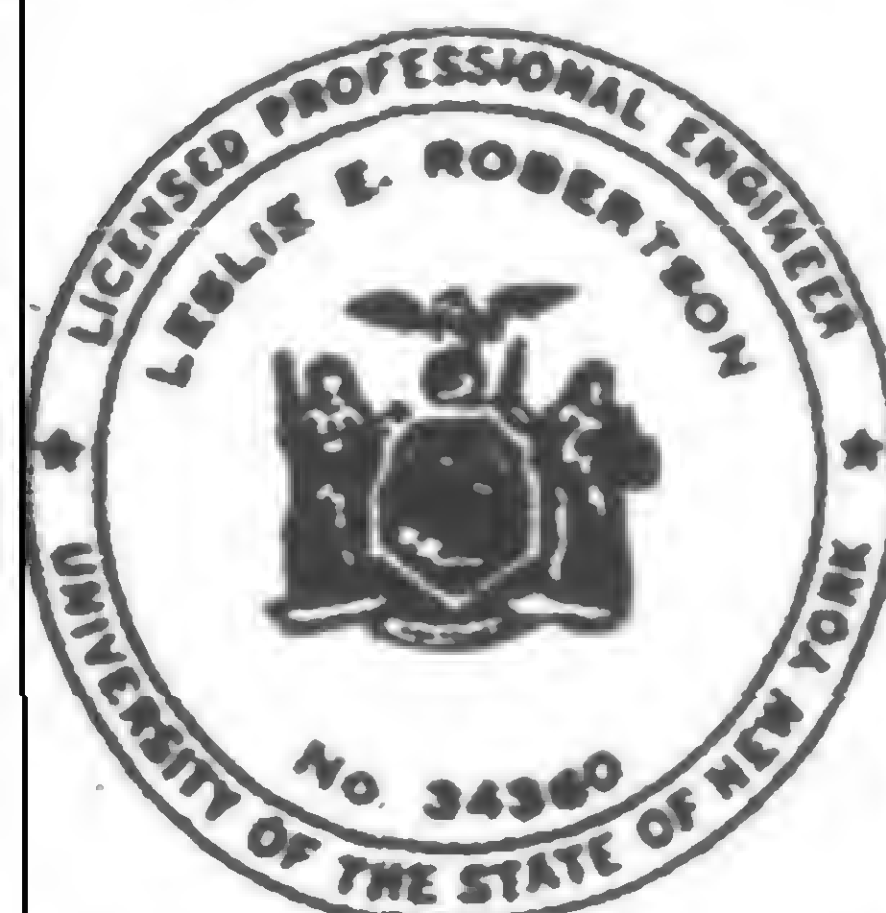
6-30-72 R

8-31-72



## Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Emulco grout mixed to flowable consistency and placed in conformance with manufacturers written directions
5. Provide erection aides as required



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DRAWN

REVIEWED

K35/10

19-K-1055.1



PROJECT THE WORLD TRADE CENTER

TITLE DETAIL FOR SHEAR HEAD REPAIR K35/9

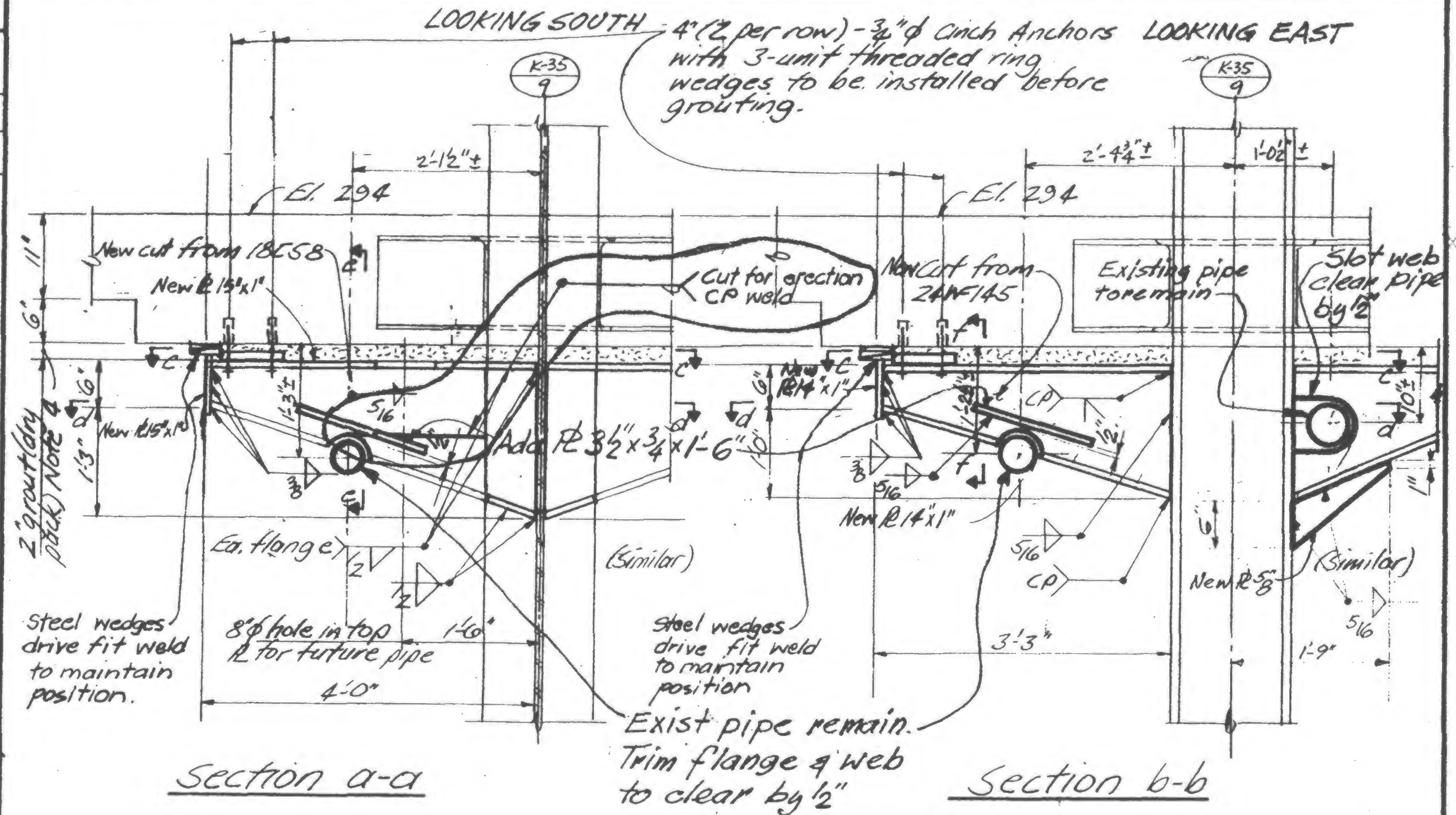
DATE 12-23-71

## REVISIONS

1-13-72  
Gen. Rev.

6-30-72

8-31-72



## Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufacturers written directions
5. Provide erection aides as required



SIGNED

DRAWN

REVIEWED

K 35/9

19-K-1055.1



PROJECT THE WORLD TRADE CENTER

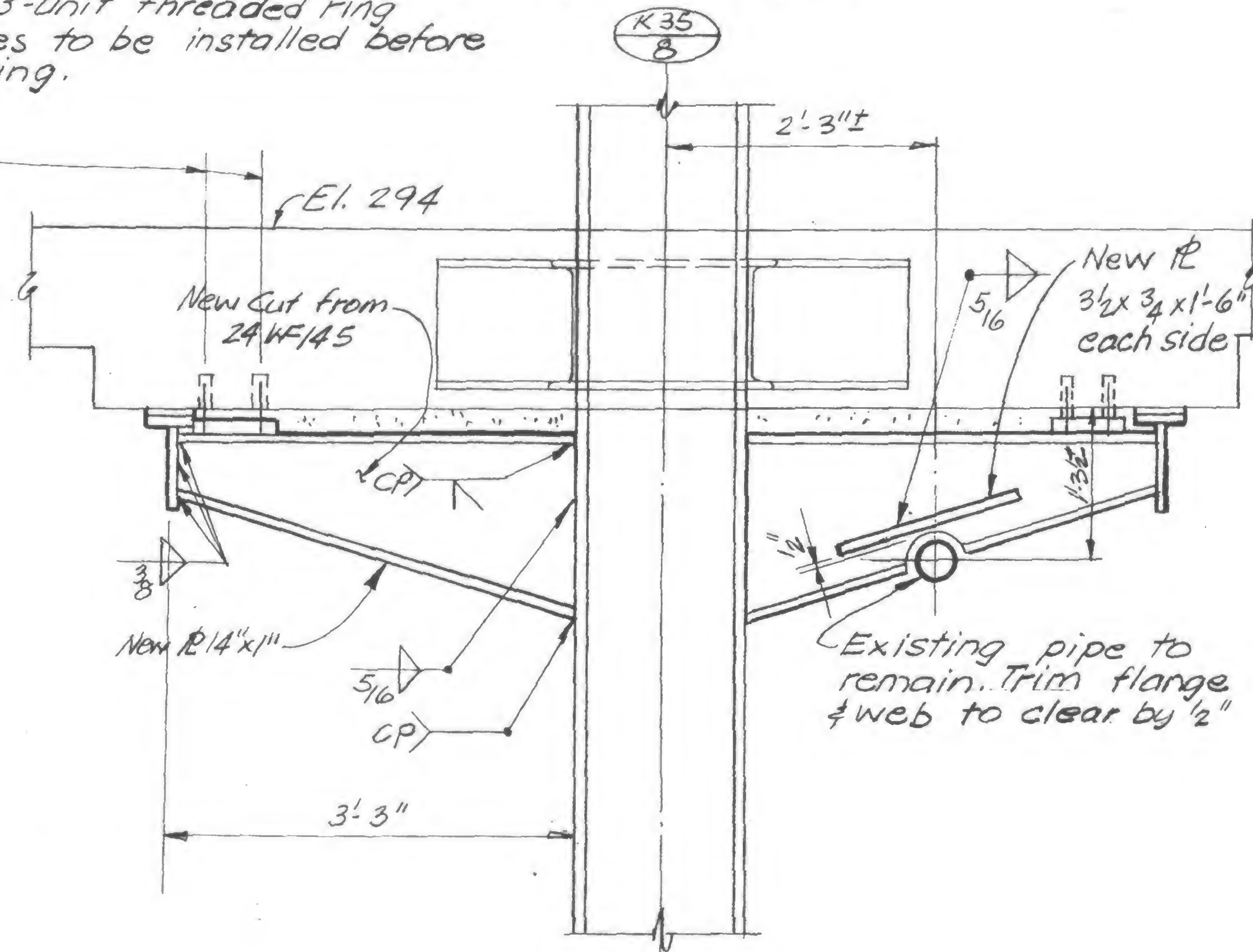
TITLE DETAIL FOR SHEAR HEAD REPAIR K-35/8

DATE 8-31-72

## REVISIONS

4" (2 per row) -  $\frac{3}{4}$ "  $\phi$  Cinch Anchors with 3-unit threaded ring wedges to be installed before grouting.

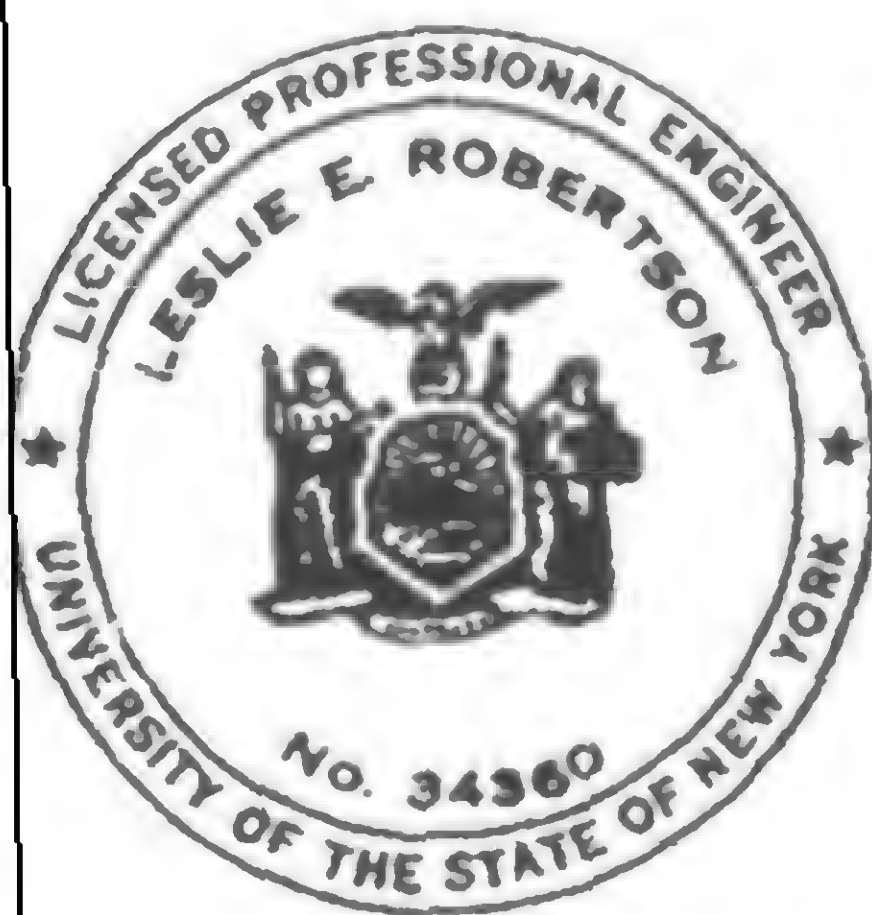
LOOKING WEST



## Notes:

## Section b-b

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy 36.
3. All electrodes to be E70xx
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufacturer's written directions.
5. Provide erection aides as required.



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DRAWN

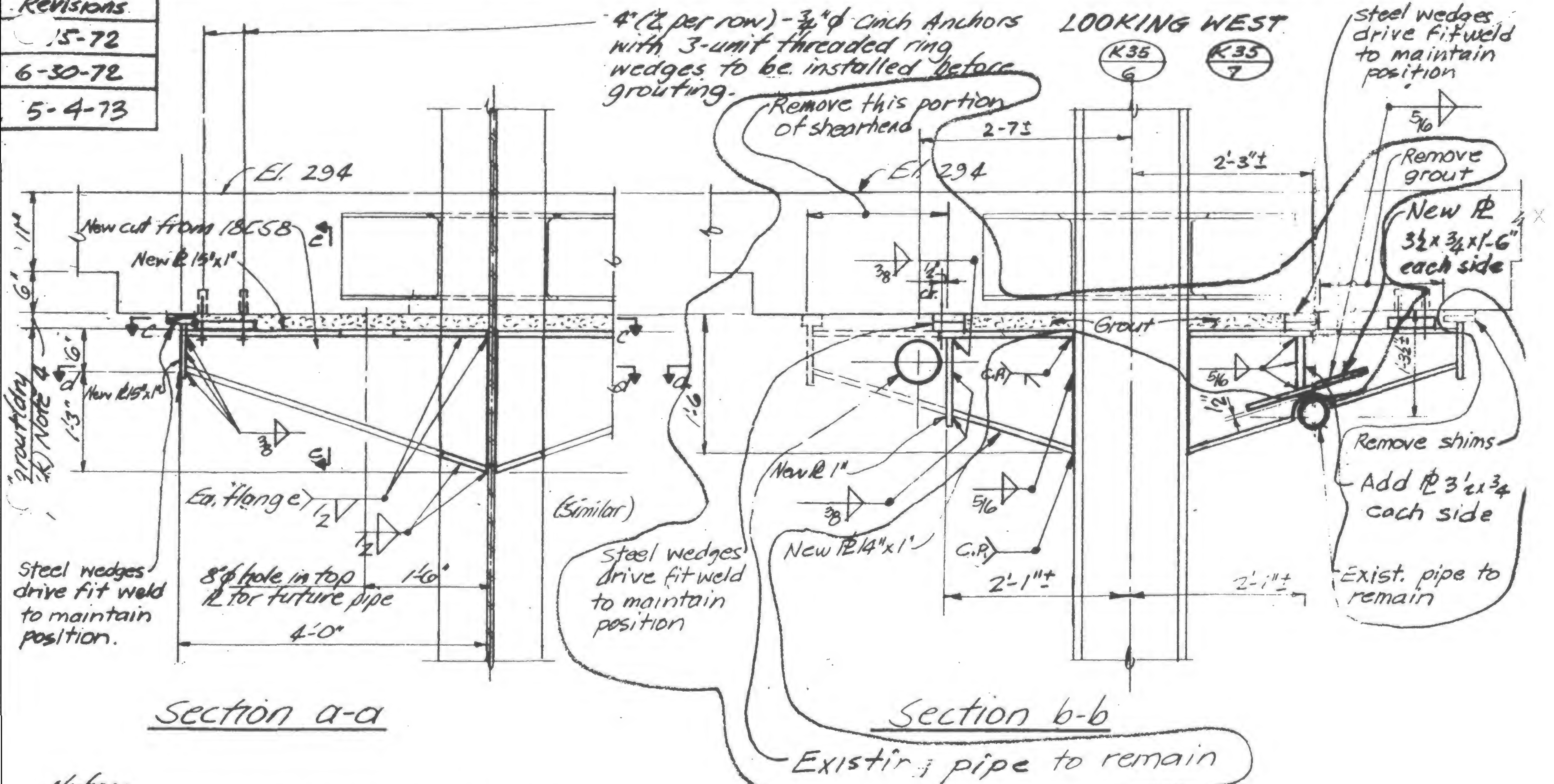
REVIEWED

K-35/8

19-K-1055.1



Revisions  
15-72  
6-30-72  
5-4-73



Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufactures written directions.
5. Provide erection aides as required

K35/6 & K35/7

19-K-1055.1



PROJECT

THE WORLD TRADE CENTER

TITLE

DETAIL FOR SHEAR HEAD REPAIR K35/5

DATE

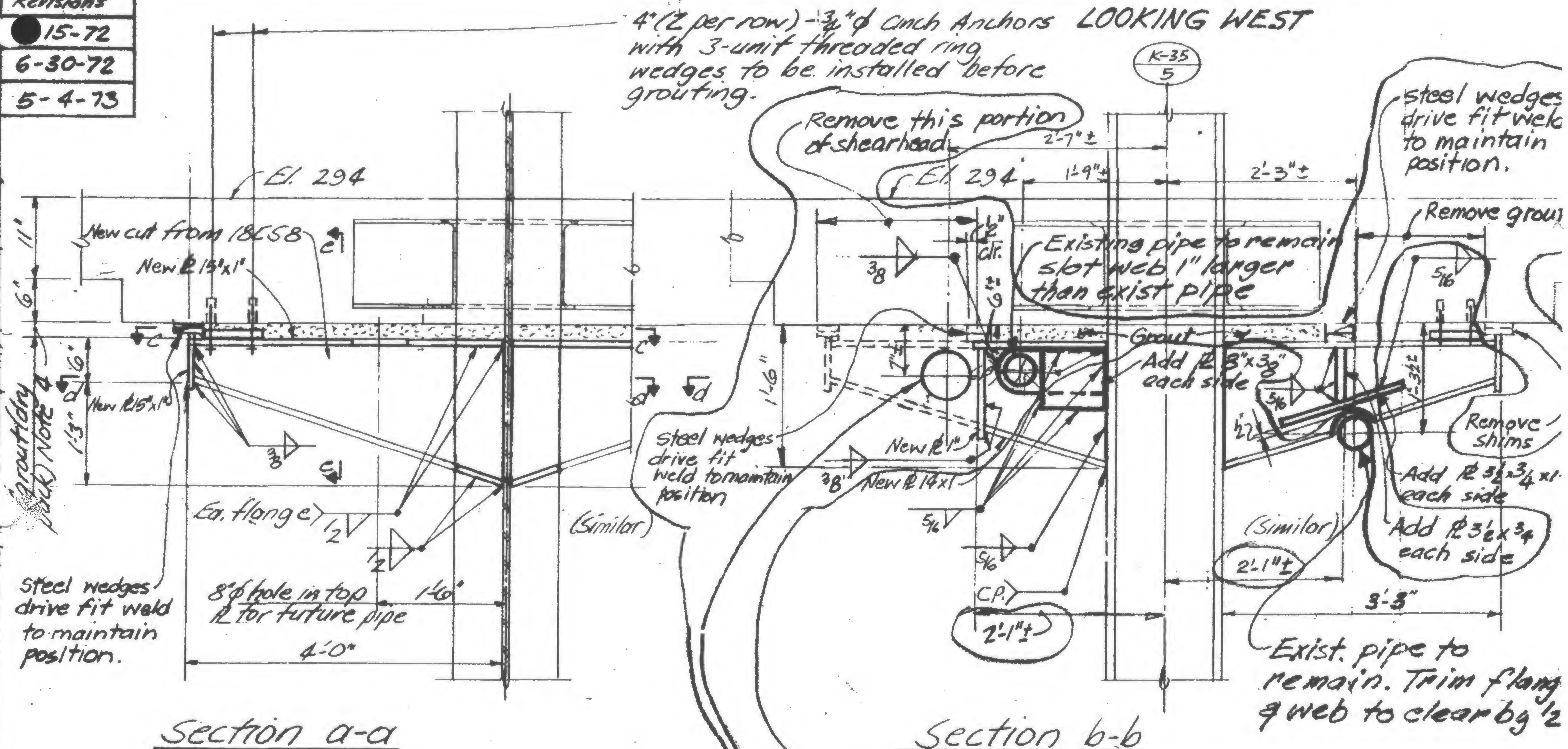
12-23-71

Revisions

15-72

6-30-72

5-4-73



## Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Enibeco grout mixed to flowable consistency and placed in conformance with manufactures written directions
5. Provide erection aides as required

K35/5

19-K-1053.1

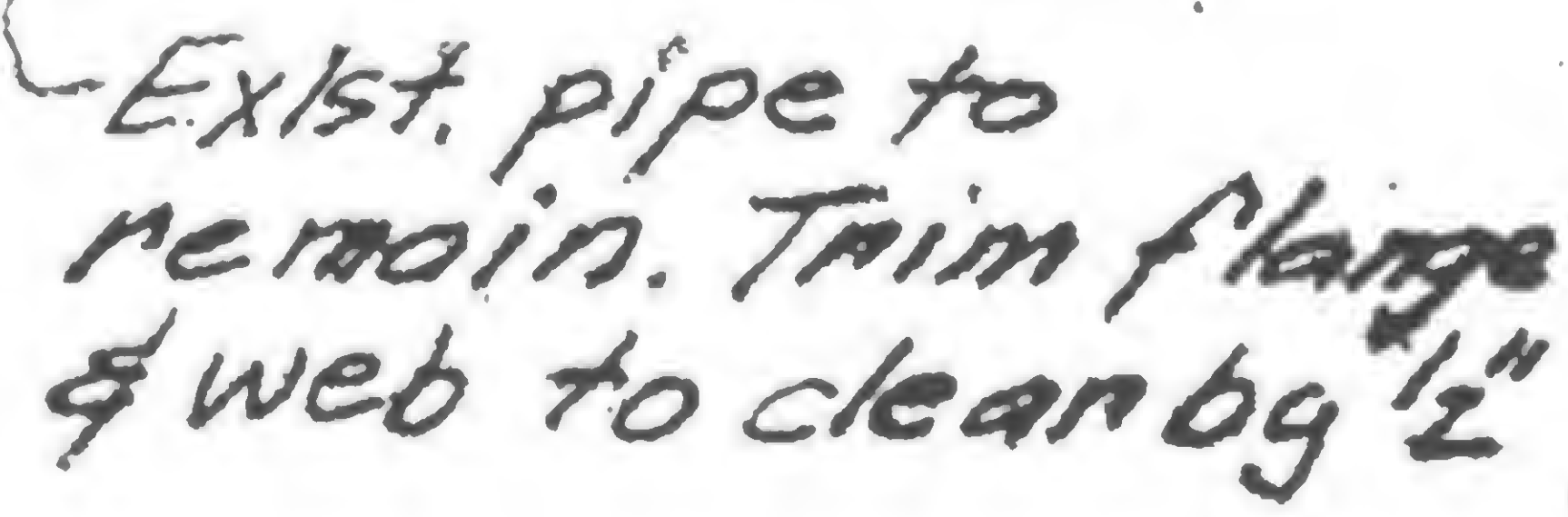


## 12

6.30-72

8-31-72

5-4-73



1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70xx
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embelo grout mixed to flowable consistency and placed in conformance with manufacturer's written directions
5. Provide erection aides as required.

'K 35/4

19-K-1055.1



19-K-1055, F





## Structural & Civil Engineers

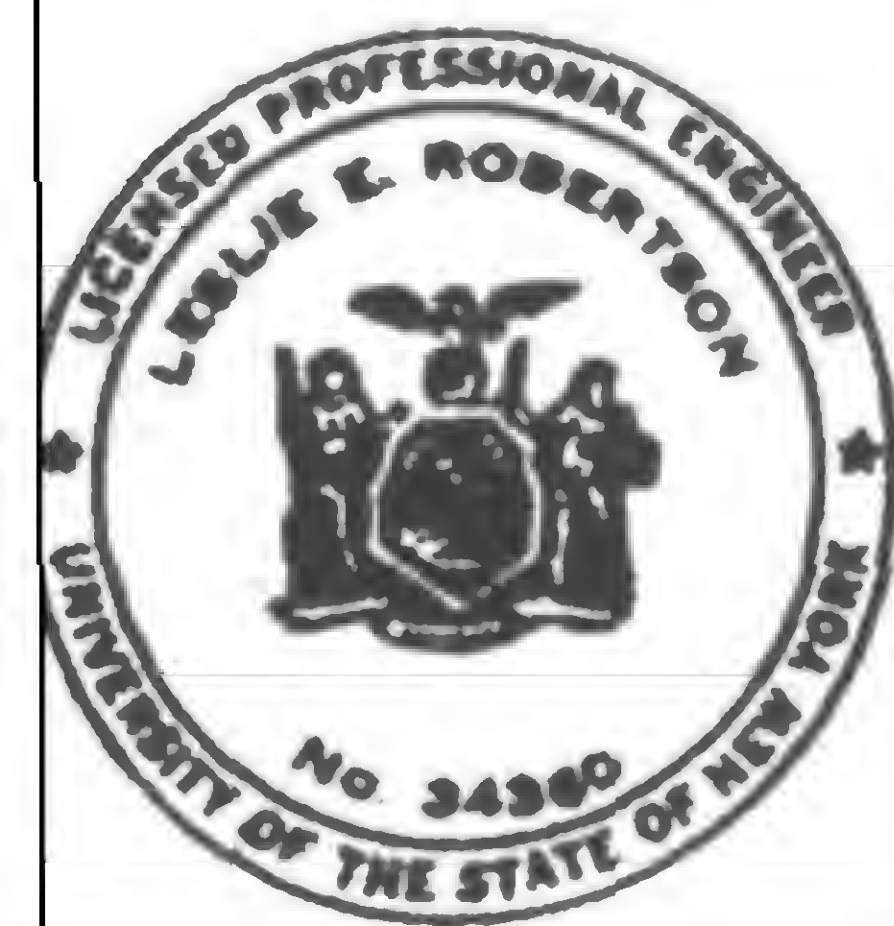
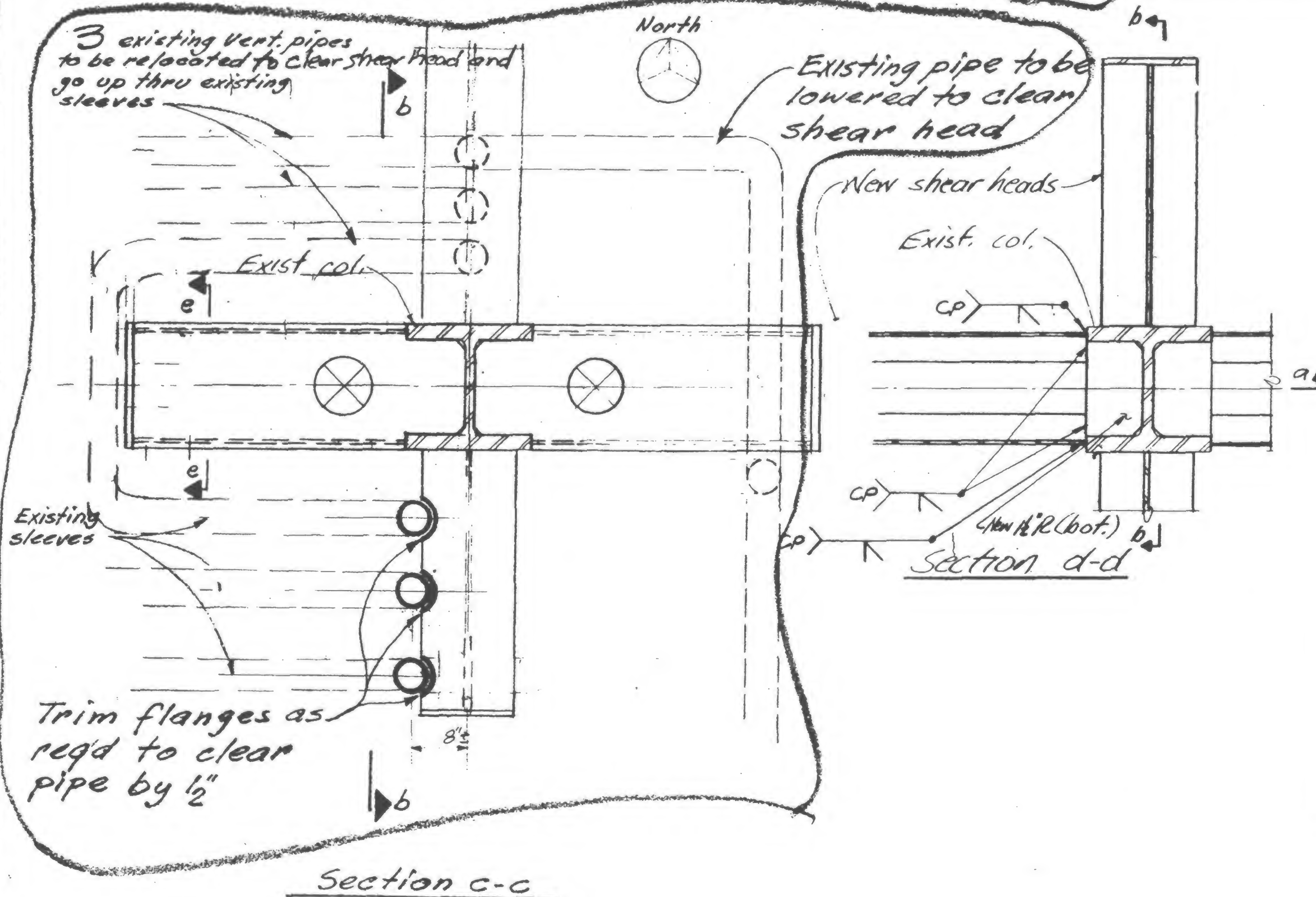
TITLE DETAIL FOR SHEAR HEAD REPAIR K31/6

DATE 12-23-71

## REVISIONS

1-15-72  
Gen. Rev.

6-30-72 R



**FINED**

**DRAWN**

## REVIEWS

K 31/6

19-K-1055.2



PROJECT THE WORLD TRADE CENTER

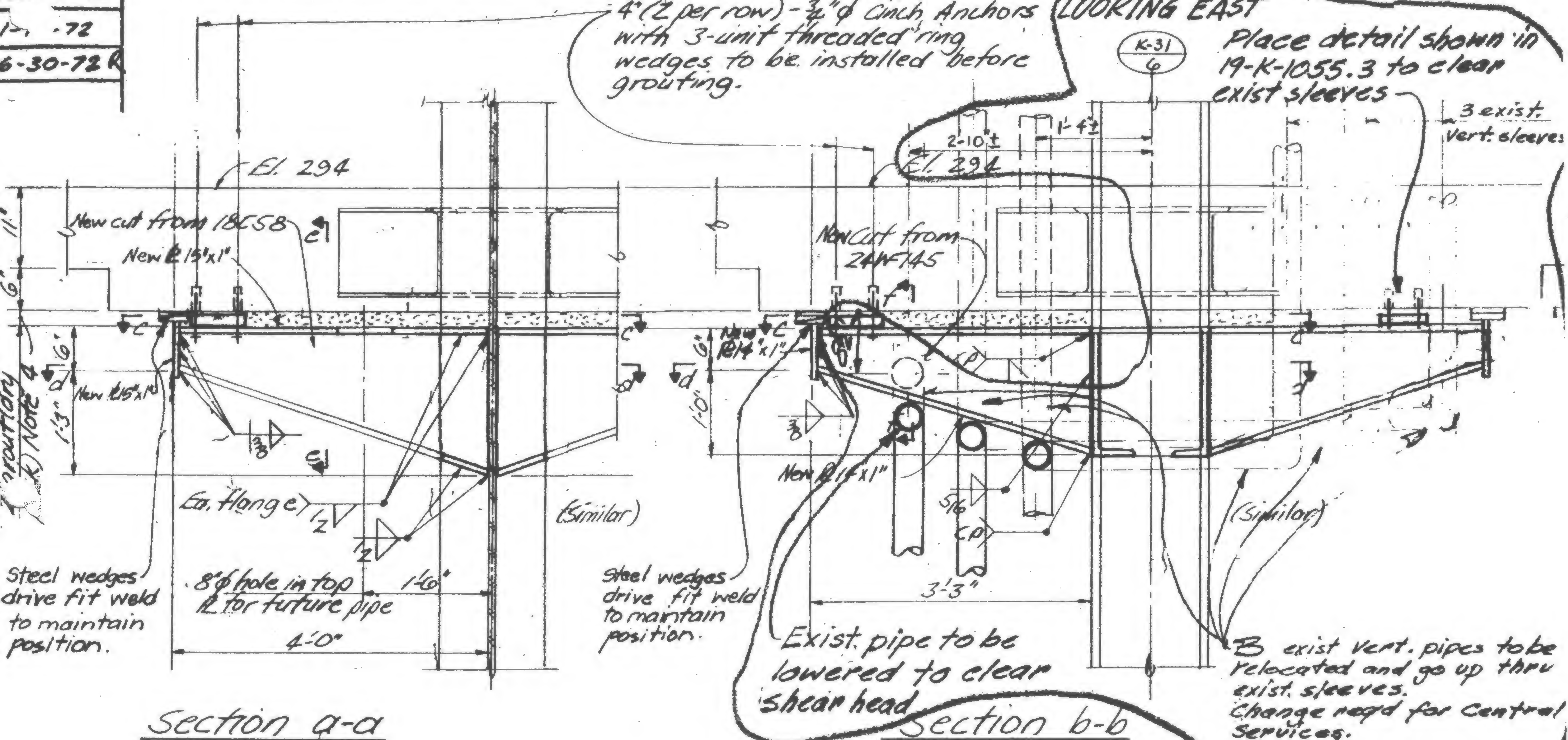
TITLE DETAIL FOR SHEAR HEAD REPAIR - K31/6

DATE 12-23-71

Revisions

1-72

6-30-72 R



## Notes:

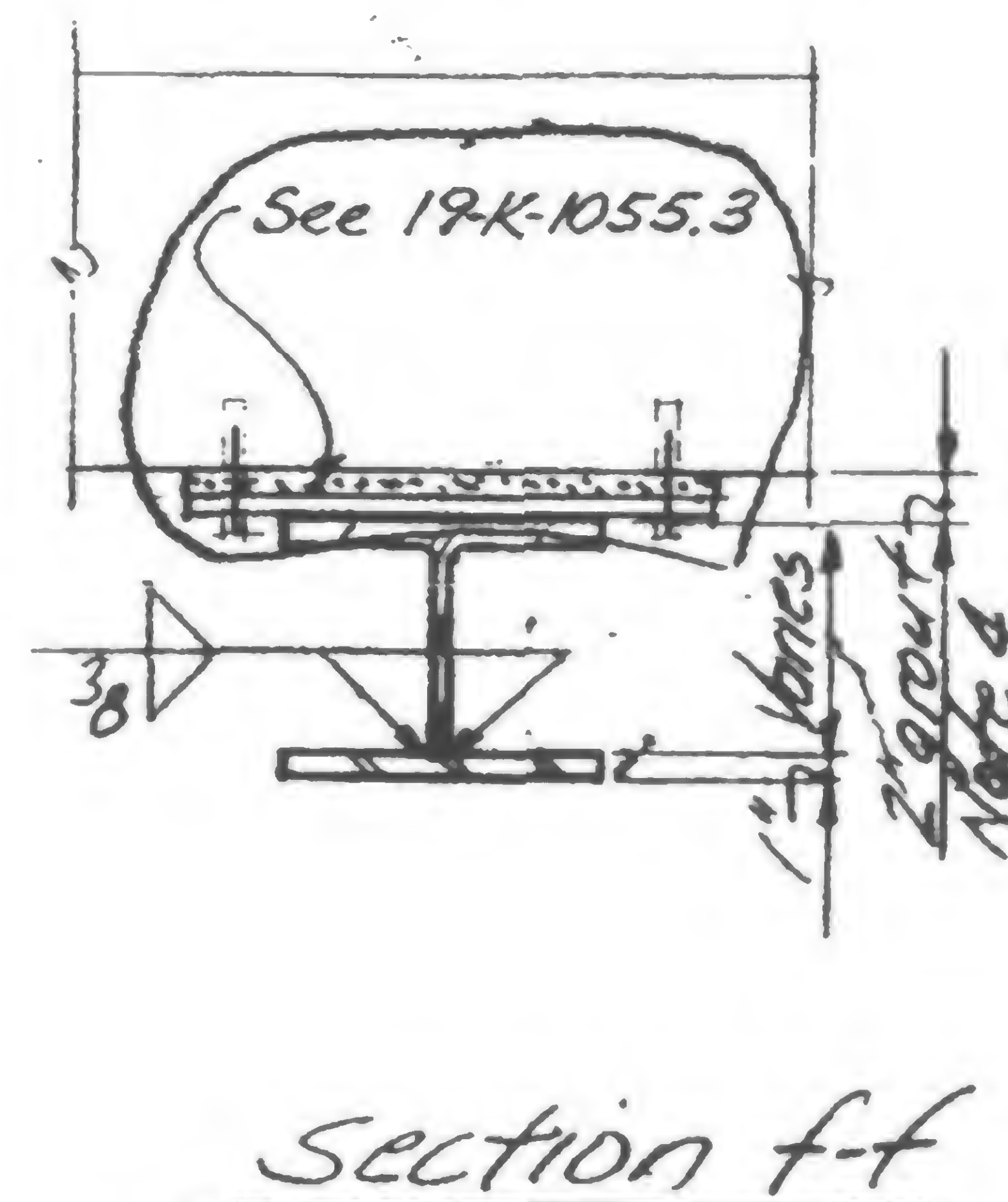
1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufacturers written directions
5. Provide erection aides as required

K 31/6

19-K-1055.1



6-30-72



REVIEWED

K31/3

19-K-1055.2



PROJECT

THE WORLD TRADE CENTER

TITLE

DETAIL FOR SHEAR HEAD REPAIR K31/5

DATE

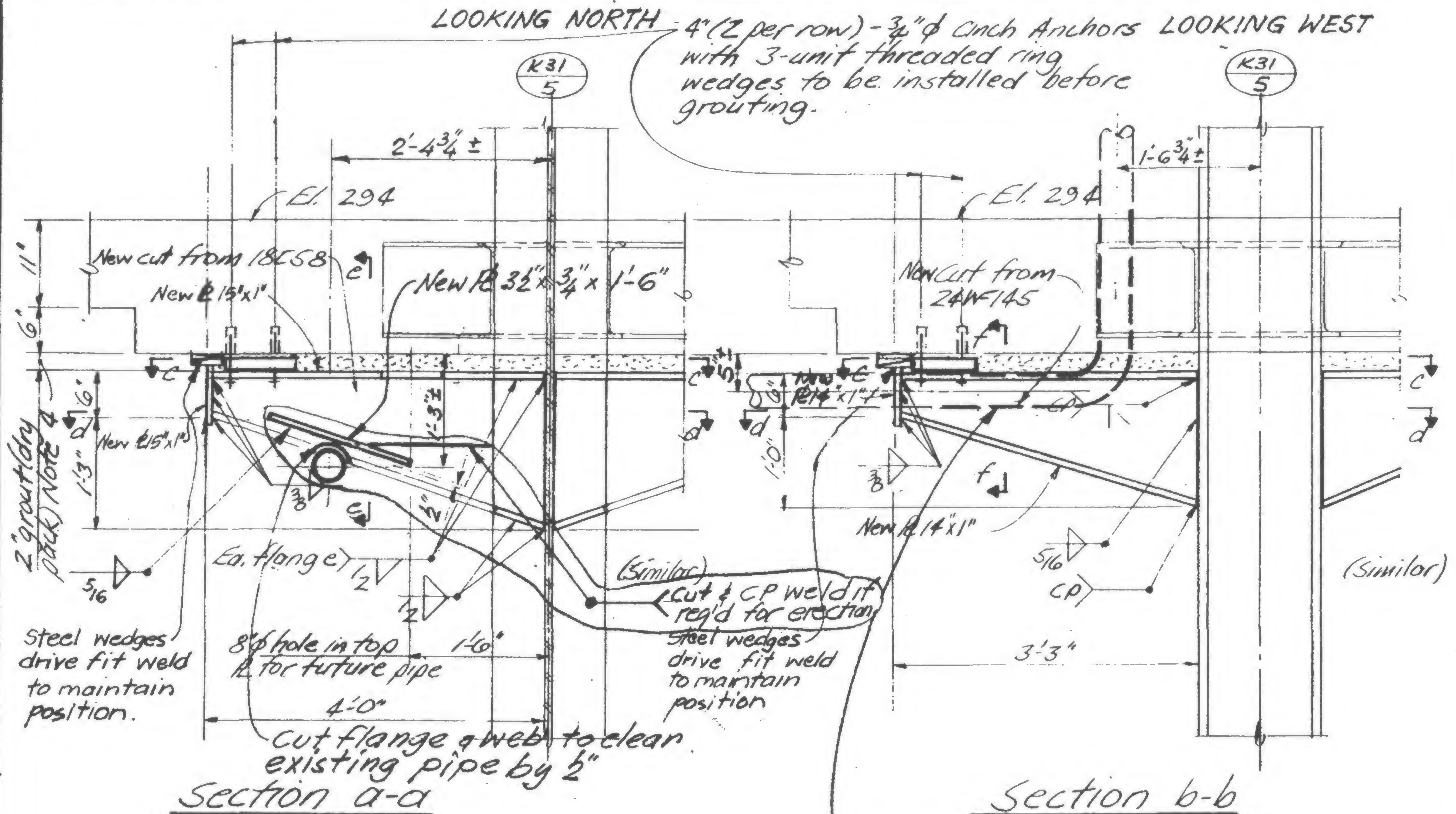
12-23-71

## REVISIONS

1-15-72  
Gen. Rev.

6-30-72

8-31-72



## Notes:

1. All material to be fabricated from field measured dimensions.
2. All new steel to be Fy36
3. All electrodes to be E70XX
4. Grout to achieve 100% contact between plates and existing drop panel. Grout to be premixed Embeco grout mixed to flowable consistency and placed in conformance with manufacturers written directions
5. Provide erection aides as required

Remove existing pipe to clear new shear head. Pipe located in different position will be shown in future Central Service Drawings

K31/5

19-K-1055.1



DESIGNED

DRAWN

REVIEWED